

SL-C35AS

RMT-216

SERVICE MANUAL

Australian Model



711B CHASSIS

October, 1983

This manual contains the Adjustment manual.

SPECIFICATIONS

System

Video recording system Rotary two-head helical scanning
 Video signal CCIR standards, PAL colour
 Aerial input 75-ohm, asymmetrical aerial socket
 Channel coverage VHF: Australian channels 0-11
 UHF: Australian channels 28-34, 39-63
 (Up to 12 programmes can be preset.)
 RF output signal Channel 0 or 1, selectable
 75 ohms, unbalanced

Video

Input VIDEO IN: BNC connector
 1.0 V ± 1.0 V (p-p)
 75 ohms, unbalanced,
 sync negative
 Output VIDEO OUT: BNC connector
 1.0 V (p-p) ± 0.1 V (p-p)
 75 ohms, unbalanced,
 sync negative

Horizontal resolution 260 lines
 Signal-to-noise ratio Colour: Better than 40 dB
 B/W: Better than 43 dB

Audio

Input AUDIO IN: phono jack
 47 kilohms, -10 dBs (0 dBs = 0.775 V rms)
 Output AUDIO OUT: phono jack
 Load impedance less than 10 kilohms
 -10 dBs with 47 kilohms load, unbalanced
 Frequency response 50 Hz to 10 kHz
 Signal-to-noise ratio 40 dB
 Audio distortion Less than 4% at 400 Hz

Tape transport

Tape speed 18.73 mm/sec.
 Maximum recording time
 2 hours 10 min. (with Sony L-500 cassette)
 3 hours 15 min. (with L-750)
 Fast forward/rewind time
 Within 5 min. (with L-500)

Timer

Clock Crystal lock
 Time indication 24-hour cycle
 Timer setting Only for recording
 2 events/week, adjustable for any day or for
 all 7 days of the week
 Power back-up Back-up duration of 3 minutes minimum at
 one time

General

Power requirements 240 V ac $\pm 10\%$, 50/60 Hz
 Power consumption 38 W
 Storage temperature -20°C to +65°C (-4°F to +149°F)
 Operating temperature
 5°C to 40°C (41°F to 104°F)
 Dimensions Approx. 430 x 105 x 360 mm (w/h/d)
 (17 x 4 1/4 x 14 1/4 inches)
 including projecting parts and controls
 Weight Approx. 10 kg (22 lbs 1 oz) net

— Continued on next page —



VIDEO CASSETTE RECORDER
SONY®



Consumer
VIDEO

Accessories supplied

75-ohm coaxial cable for recorder to TV connection	1
Remote Commander RMT-216 with two IEC designation R6 batteries	1

Design and specifications subject to change without notice.

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY SHADING AND MARK  ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL TO SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

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Accessories supplied

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ADJUSTMENT MANUAL

SECTION 1

GENERAL

1-1. PRECAUTIONS

On safety

- This unit operates on 240 V ac, 50/60 Hz.
- Should any solid object or liquid fall into the cabinet, turn off the unit and have it checked by qualified personnel before operating it any further.
- To disconnect the mains lead (ac power cord), pull it out by the plug. Never pull the lead itself.

On installation

- Allow adequate air circulation to prevent internal heat build-up. Do not place the unit on surfaces (rugs, blankets, etc.) or near materials (curtains, draperies) that may block the ventilation grille.
- Do not install the unit near heat sources such as radiators or air ducts or in a place subject to direct sunlight, excessive dust, mechanical vibration or shock.
- The unit is designed for operation in a horizontal position. Do not install it in an inclined position.
- Keep the unit and cassette tapes away from equipment with strong magnets, such as a microwave oven, large loudspeakers, etc.

On operation

- When the unit is not to be used for a long period, turn the power off to conserve energy and to extend the useful life of your unit.
- Remove and store video cassettes after recording or playback.

On cleaning

Clean the cabinet, panel and controls with a dry soft cloth. Do not use a moistened cloth or any type of solvent, such as alcohol or benzene, which might damage the finish.

On repacking

Do not throw away the carton and packing materials. They make an ideal container in which to transport the unit. When shipping the unit to another location, repack it as illustrated on the carton.

On colour broadcasting systems

This machine is designed to record and playback using the PAL colour standard. Recording and playback of video sources based on other colour systems cannot be guaranteed.

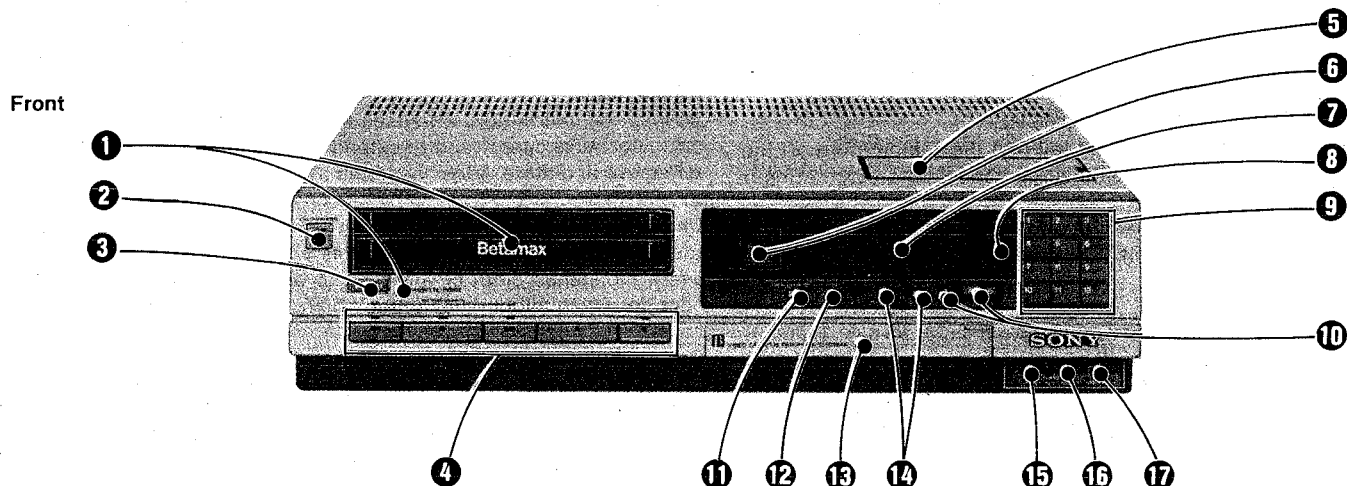
If you have any questions about this unit, contact your Sony dealer.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

1-2. LOCATION AND FUNCTION OF CONTROLS



1 Cassette compartment and CASSETTE INSIDE lamp

Insert a cassette after turning on the recorder. The lamp lights up when a cassette is inside.

2 ON/STANDBY button and lamp

Press to turn on the unit. The lamp will light up. Press again to turn it off.

The timer section will continue to operate and the time will be displayed even if the ON/STANDBY button is off so long as the ac power cord is connected to the wall outlet.

3 EJECT button

Press to remove the cassette. This button does not function when the recorder is turned off.

4 Function buttons

▶ **PLAY button:** Press to play the tape back.

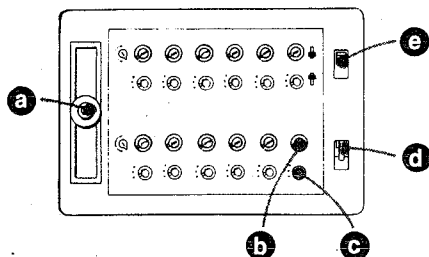
◀◀ **REW button:** Press to rewind the tape. Also used for the reverse picture search and skip scan operation.

▶▶ **FF button:** Press to advance the tape rapidly. Also used for the forward picture search and skip scan operation.

■ **STOP button:** Press to stop the tape.

|| **PAUSE button:** Press to stop the tape for a moment during recording or playback. A still picture will be seen during playback. Press again to release the pause mode.

5 Tuning compartment



a Tuning aid: Use to select the band and to turn the tuning control. The indication at its end shows the approximate position within the selected band.

b Tuning control: With the supplied tuning aid, turn until the desired station is properly tuned in.

c Band-select switch: Using the supplied tuning aid, set to V_L (channels 0 through 5), V_H (channels 5a through 11), or U (channels 28 through 34 and 39 through 63) according to the channel to be tuned in.

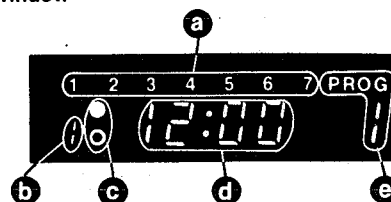
d AFT switch: When the tuning compartment is closed, the automatic fine tuning circuit locks in the signal and maintains a sharp picture.

e TEST SIGNAL switch: Set to ON to obtain a test pattern.

6 REMOTE SENSOR

Detects the remote control signal transmitted from the supplied Remote Commander.

7 Display window



a Day of the week indication: Shows the day of the week on which the timer-activated recording will take place.

b Event number

c Turn-on and turn-off setting indications: The "●" mark shows you are setting the turn-on time and the "○" mark shows the turn-off time.

d Time and counter display: Usually shows the present time. When the TIMER/COUNTER button is pressed to COUNTER, the display shows the counter number.

e Programme number: Shows the programme number selected with the programme select buttons.

When the INPUT SELECT switch is set to LINE to record signals from the VIDEO IN and AUDIO IN jacks, the indication will change to "AU".

8 TIMER REC lamp

Lights when the TIMER REC button behind the front panel is pressed to set the recorder in the stand-by mode. It remains lit till the timer recording is finished.

9 Programme select buttons

Select the number of the programme to be recorded or to be viewed. The selected programme number will appear in the display window.

10 RECORD button and lamp

Press to start recording. The lamp will light up.

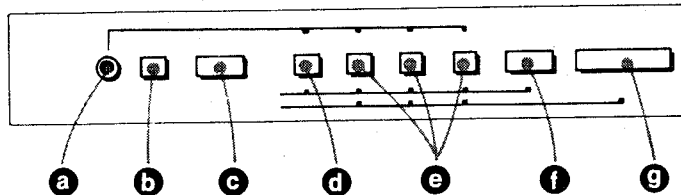
11 TIMER/COUNTER button

Press to set the display to the tape counter. To reset to clock, press it again.

12 COUNTER RESET button

Press to set the tape counter reading to "0000".

13 Timer setting section (behind the front panel)



a CLOCK SET button: Press to set the clock.

b CLEAR button: Press to clear the timer programme memorized.

c TIMER SET button: Press to set the turn-on/off time of a recording.

d DAY button: Press to set the turn-on day of a recording.

e HOUR, 10 MIN and MIN buttons: Press to set the turn-on/off time of a recording.

f PROG button: Press to select the TV programme to be recorded by the timer.

g TIMER REC button: Press to set the recorder in the timer recording stand-by mode.

14 TV/VTR button and VTR lamp

To view a TV programme selected by a programme select button on the recorder or to monitor the picture being recorded, press this button so that the VTR lamp lights up. When the ► button on the recorder is pressed, the unit is automatically set in this mode. To view a TV programme in the usual manner, press this button so that the lamp goes off. When the recorder is turned off, the recorder is automatically set in this mode.

15 TONE select switch

Normally set to the H position. Set to L if the sound seems to exaggerate high frequencies during the playback of a tape recorded on another recorder.

16 INPUT SELECT switch

Select the programme to be recorded.

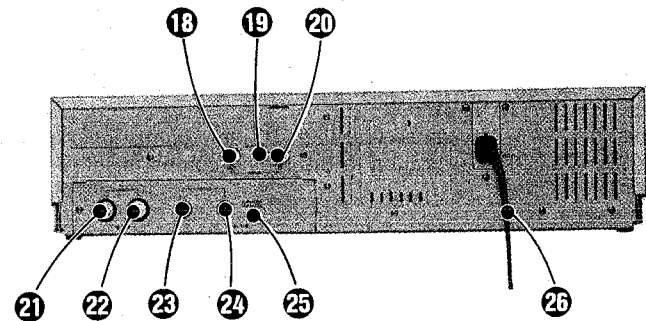
LINE: for recording signals connected to the VIDEO IN and AUDIO IN jacks

TUNER: for recording TV programmes

17 TRACKING control

If streaks or snow appears during the playback of a tape recorded on another recorder, turn this knob to obtain the best possible picture.

Rear



18 AERIAL OUT socket

Connect the aerial input of the TV receiver using the supplied cable.

19 RF unit selector

Select the output channel at the AERIAL OUT terminal. Set the switch to 0ch or 1ch, whichever is not active in your area.

20 AERIAL IN socket

Connect the aerial cable.

21 VIDEO OUT jack (BNC type)

Connect to the video input of another video cassette recorder or a video monitor.

22 VIDEO IN jack (BNC type)

Connect to the video output of a camera, another video cassette recorder, etc.

23 AUDIO OUT jack (phono type)

Connect to the audio input of a video monitor or a video cassette recorder.

24 AUDIO IN jack (phono type)

Connect to the audio output of a camera or another video cassette recorder.

25 CAMERA REMOTE jack (special mini jack)

For camera recording, connect an ac adaptor to this jack.

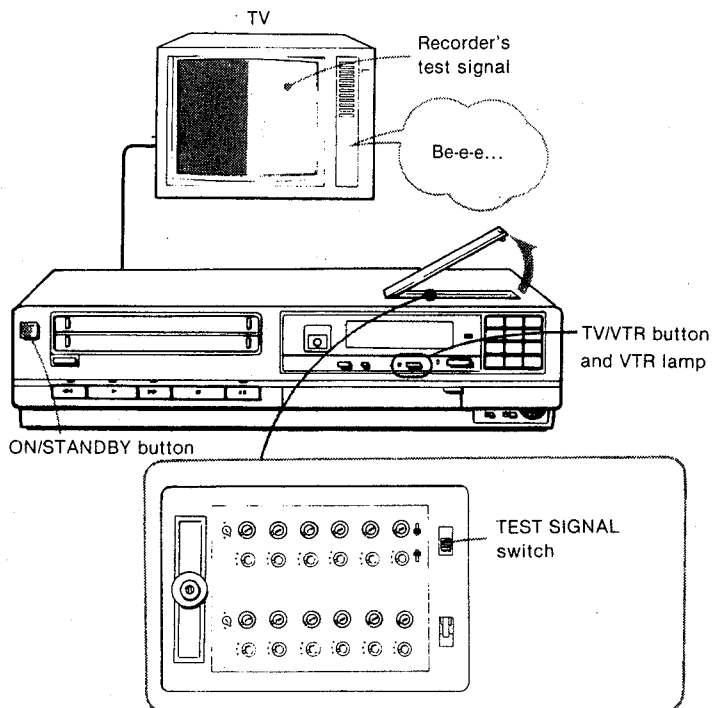
26 AC mains lead

1-3. ADJUSTING THE TV

Adjust your TV receiver to receive the signal from your recorder.

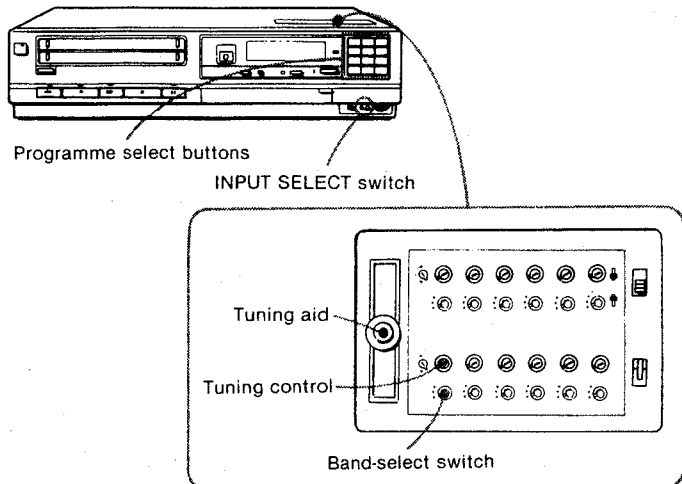
- 1 Set the RF unit selector located at the rear of the recorder to 0 or 1, whichever channel is not active in your area.
- 2 Press the ON/STANDBY button.
- 3 Press the TV/VTR button so that the VTR lamp lights up.
- 4 Set the TEST SIGNAL switch in the tuning compartment of the recorder to ON.
- 5 Turn on the TV.
- 6 Set the TV to either VHF channel 0 or 1 to agree with the setting of the RF unit selector. You will see a clear black and white pattern on the TV screen and you hear a continuous tone. This is the recorder's test signal. If the test pattern is not displayed clearly on the TV screen, fine-tune the channel on the TV.
 - For details about TV channel adjustment, see the instruction manual of the TV receiver.

Now your TV receiver is tuned to the recorder. Whenever you use the video recorder, you should set the TV to the channel which you have chosen above.



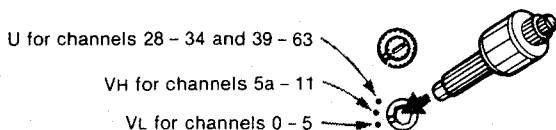
1-4. TV STATION PRESETTING

Once you have tuned your TV to the recorder, the next step is to tune the recorder to all the TV stations that you can receive in your area. Up to 12 TV stations can be preset in any order.

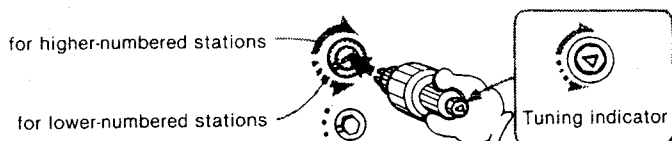


PRESETTING PROCEDURE

- 1 Set the INPUT SELECT switch to TUNER.
- 2 Press the TV/VTR button so that the VTR lamp lights up.
- 3 Press the programme-select button to be preset.
- 4 Open the tuning compartment and, using the supplied tuning aid, set the band-select switch corresponding to the selected programme number to one of the three positions :



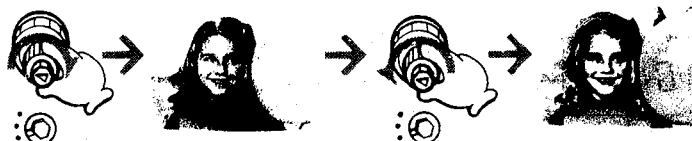
- 5 Using the other side of the tuning aid, turn the tuning control until the desired station is properly tuned in. The indicator on the top of the tuning aid shows the approximate position in the selected band.



If you keep turning the tuning control clockwise, you will again get to the lowest-numbered station within that band.

When the picture appears, slowly turn the tuning control to the right until a herringbone pattern appears in the coloured part of the picture, then turn the control back until the picture is perfectly clear.

To identify the stations, consult a newspaper or TV programme guide.



- 6 Repeat steps 3, 4 and 5 for all the other stations.
- 7 Close the tuning compartment. AFT (automatic fine tuning) circuit then locks in the signal and maintains a sharp picture.

After presetting the TV stations, you can use the programme select buttons of the recorder to tune in a station for viewing as well as recording.

1-5. CLOCK SETTING

When you connect the mains lead to a wall outlet, the clock indicates "0:00" with the two dots blinking.

Example : To set the clock to 7 : 35 p.m. (19 : 35) on Tuesday *

* Time indication

AM				PM					
12:00 (midnight)	1:00		11:00	12:00 (noon)	1:00	2:00		10:00	11:00
↓	↓		↓	↓	↓	↓		↓	↓
0:00	1:00		11:00	12:00	13:00	14:00		22:00	23:00

Day indication

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
↓	↓	↓	↓	↓	↓	↓
1	2	3	4	5	6	7



1 CLOCK SET SET/START 	
2 DAY 	
3 HOUR 	
4 10 MIN 	
5 MIN 	
6 CLOCK SET SET/START With the time signal, press and immediately release , otherwise the clock will not start operating. If you press the CLOCK SET button for more than a second, clock adjustment will be required again.	 The upper dot blinks for the first half of each minute, and the lower dot for the second half.

Zero second adjustment

Press the CLOCK SET button quickly (less than a second).

While the upper dot is blinking, the clock is set to the time displayed 00 second. For example, if the clock time is 7 : 30, 20 seconds, it is set to 7 : 30, 00 second.

While the lower dot is blinking, the clock advances one minute and is set to the time displayed 00 second. For example, if the clock time is 7 : 30, 40 seconds, it is set to 7 : 31, 00 second.

If you press the CLOCK SET button for more than a second, "0 : 00" blinks to show that the clock adjustment is required again.

When power has been interrupted for more than 3 minutes, the time indication "0 : 00" blinks, showing that the clock must be reset.

If power has been interrupted for less than 3 minutes, the displayed time remains correct.

The DAY, HOUR, 10 MIN and MIN buttons can be pressed in two ways :



When you hold a button down, the digits will advance continuously until the button is released.

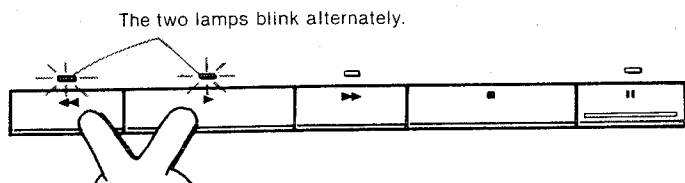


When you press and immediately release a button, the digits will advance by one.

1-6. AUTO PLAY

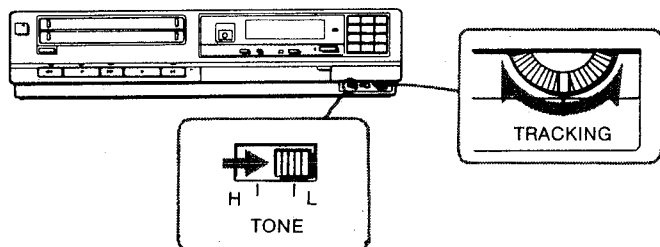
To play back from the beginning of the tape after rewinding

Press the ► PLAY button and ◀◀ REW button simultaneously in the stop mode. The lamps above these buttons blink alternately during rewinding. After the tape is completely rewound, it will be automatically played back.



When playing back a tape recorded on another machine

If streaks or snow appears, adjust the TRACKING control for the best possible picture. Return the control to the centre position after playing back the tape.

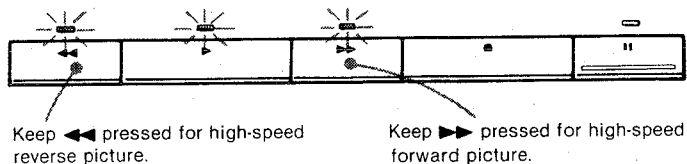


If the playback sound seems to have exaggerated high frequencies, set the TONE selector to L. Return the selector to the normal H position after playing back the tape.

1-7. TO SEARCH FOR A PARTICULAR SCENE

Picture search Viewing the picture at fast speed to find a particular scene

During playback

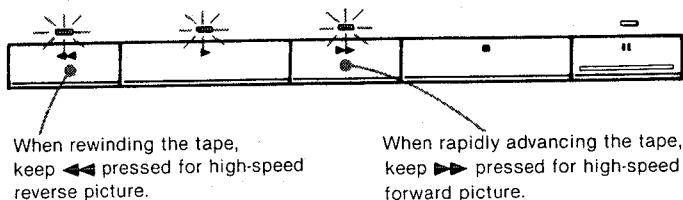


Release the button at the desired point. Normal playback will resume.

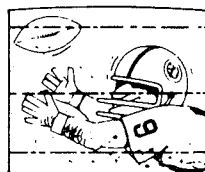
The picture search mode can also be started directly from the pause mode.

Skip Scan Viewing the picture momentarily during fast-forward or rewind

During rewind or fast-forward mode



Release the button at the desired point. The normal rewind or fast forward mode will resume.

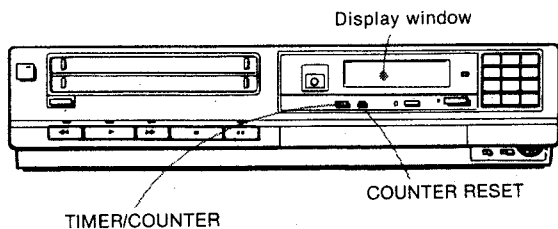


Streaks will appear during the picture search, the skip scan and the pause modes.

1-8. USE OF THE TAPE COUNTER

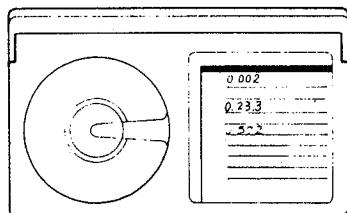
Turn on the power and press the TIMER/COUNTER button to display the counter reading in the display window.

To return the display to the present time, press the TIMER/COUNTER button again.



Before starting recording or playback, press the COUNTER RESET button to set the counter to "0000".

By noting the counter reading at the desired point, you can easily find that point later by referring to the counter.



Write the counter readings you want to remember on the label of the cassette.

Normal rewinding will stop at the tape counter's "0000" position.

To rewind the tape further, press the ◀◀ button again.

With automatic rewinding from the tape end or for "auto play", the tape will not stop at the counter's "0000" position.

Notes

- The counter reading is automatically reset to zero when a cassette is newly inserted.
- While the power is off, the display shows the present time, regardless of the TIMER/COUNTER setting.
- The counter reading will be retained in the memory even after the power is turned off, as long as the cassette is in the cassette compartment.
- The tape counter does not operate when a blank, unrecorded tape is played.

1.9. TIMER-ACTIVATED RECORDING

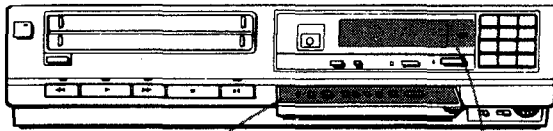
You can make one or two recordings within 7 days even when you are not at home. These recordings are identified as event 1 or event 2.

Check before setting the timer

- Is the clock set to the correct day and correct time?
- Timer setting can only be made after the clock has been set.
- Is a cassette inserted in the recorder?
- Is the cassette long enough to record the programmes?
- Does the cassette have a safety tab on the bottom?
- Is the INPUT SELECT switch set to TUNER?

Note: The timer cannot be set during recording, playback, or when the INPUT SELECT switch is set to LINE (The "AU" appears on the display window.).

Example: To record a PROG 2 broadcast from 9:00 AM to 11:25 AM on Friday for event 1.



1 Button to be pressed. TIMER SET If the recorder is off, it will be turned on automatically.	Time display The segment to be set will blink. Turn-on indication Shows the event number. Event 1 will always be displayed first.
2 Select the turn-on day. DAY Indication changes as follows: 1234567 (everyday) → 1 (Monday) → 2 (Tuesday)... → 7 (Sunday)	
3 Set the turn-on time. H 10M M	
4 Select the programme to be recorded. PROG	

5 TIMER SET	Turn-off indication Blinks.
6 Set the turn-off time. H 10M M	
7 TIMER REC TIMER REC lamp lights up and the power is turned off. At the preset turn-on time, recording will start automatically and will stop at the preset turn-off time. If the inserted cassette is at its end or does not have the safety tab, the cassette will be automatically ejected.	TIMER REC Present day and time

ONCE THE TIMER REC LAMP HAS LIT UP, NO FUNCTION OF THE RECORDER CAN BE ACTIVATED, except for checking the timer setting.

To operate the recorder after setting the timer for recording, press the TIMER REC button so that the TIMER REC lamp goes off. To reactivate the timer recording standby mode, be sure to press the TIMER REC button again.

To record to the end of the tape

Set the turn-off time to a time after the tape will reach its end.

If the tape reaches the end during the timer recording

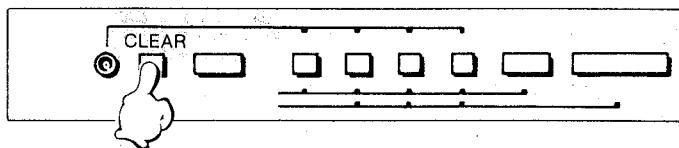
The recording will stop and the tape will be rewound to the beginning. Then after about a second, the recorder will be turned off.

To stop the on-going timer recording

Press the TIMER REC button so that the TIMER REC lamp goes off. The unit will be turned off automatically after about a second.

To erase the setting of an event

1. Press the TIMER SET button to display the event to be erased.
2. Press the CLEAR button. This event will be erased from the memory.



When a power interruption occurs before or during timer recording

If the clock shows "0:00" and the dots blink

All the timer settings have been erased. Reset the clock time and the timer settings.

If the clock still shows the correct time but the dots blink

The power has been interrupted for less than 3 minutes. The timer programmes are retained in the memory and the on-going timer recording will resume when the power is resupplied. To stop the blinking, press any button in the timer-setting compartment.

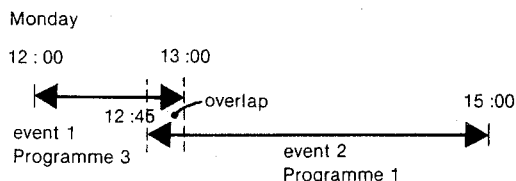
ERROR INDICATIONS

If the ● and ○ indications as well as the event numbers blink when the TIMER REC button is pressed...

It means that the setting of these events overlap. Check the settings and eliminate the overlap.

Example :

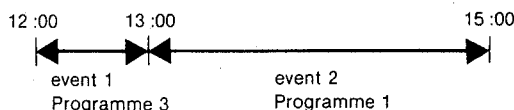
Timer setting



Even with this error indication, recording can be made.

In this case, the first preset recording continues to its turn-off point and then the next recording begins.

Realized recording



If the turn-on time of the 2 events is the same, recording of event 1 will be made.

TO CHECK THE TIMER SETTING

Press the TIMER SET button. Each time you press the button, the indication will change as follows :

Example : Both event 1 and 2 have been programmed.

Turn-on day and time of event 1 → Turn-off day and time →

Turn-on day and time of event 2 → Turn-off day and time →

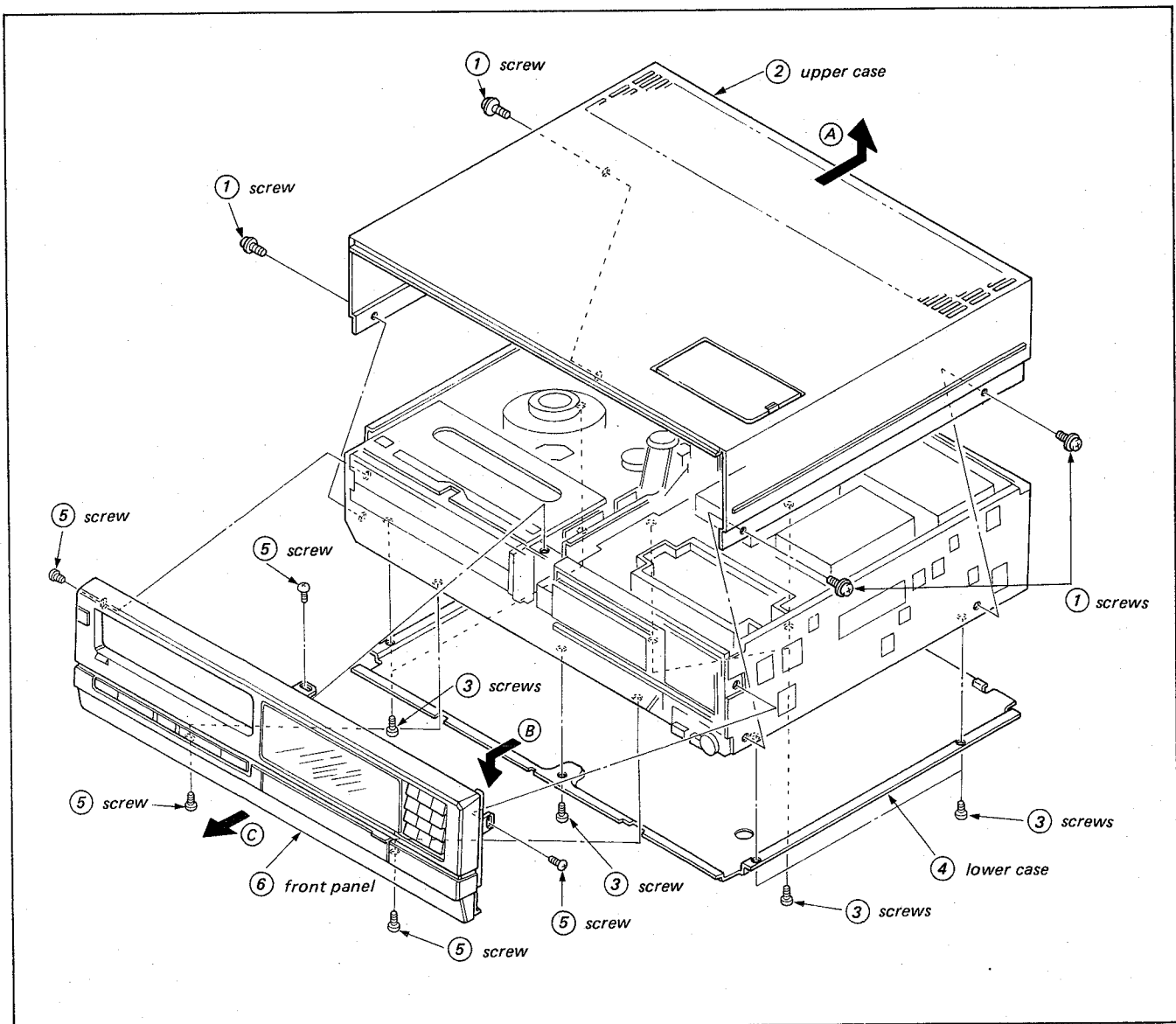
Present time

During actual timer recording, only the turn-off time of the event being recorded can be checked.

SECTION 2 DISASSEMBLY

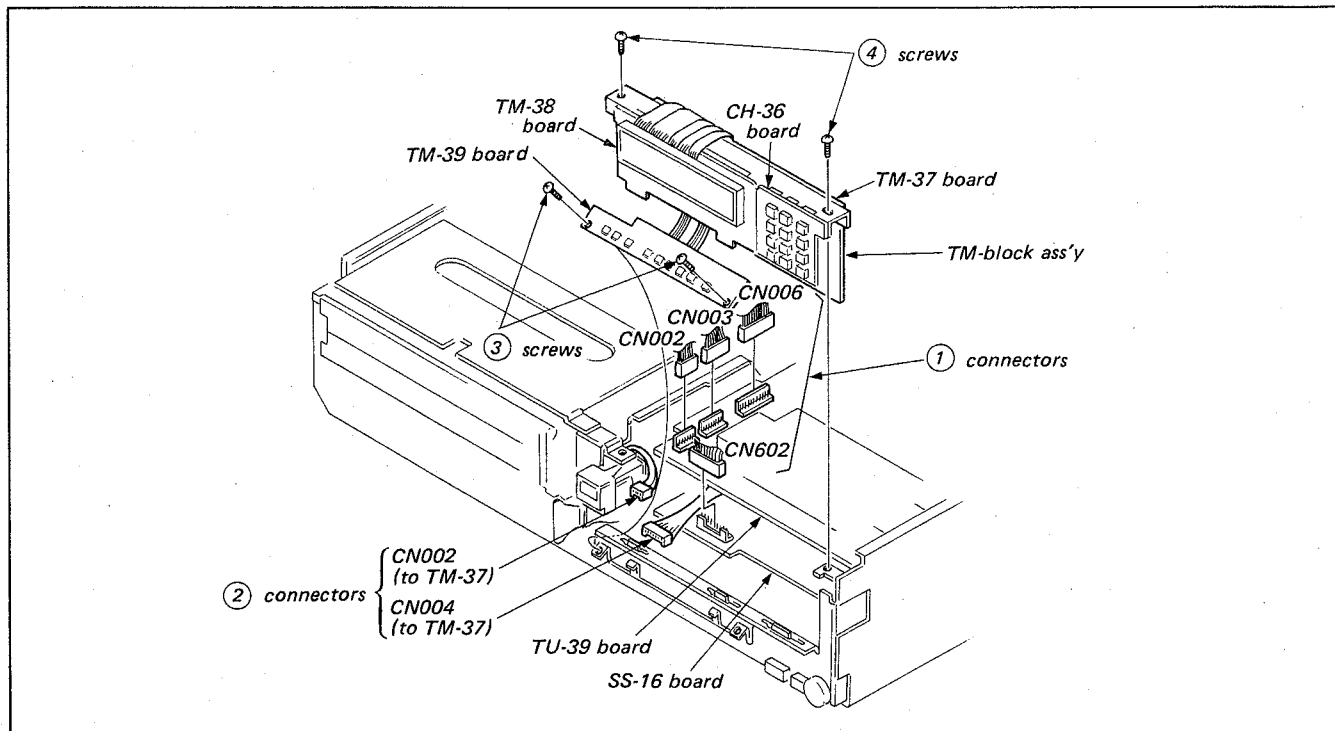
2-1. REMOVAL OF THE CASE AND FRONT PANEL

- 1) Remove the four screws ①.
- 2) Remove the upper case ② in the direction shown by the arrow A.
- 3) Remove the seven screws ③ and the lower case ④ in the direction shown by the arrow B.
- 4) Remove the five screws ⑤ and the front panel ⑥ in the direction shown by the arrow C.



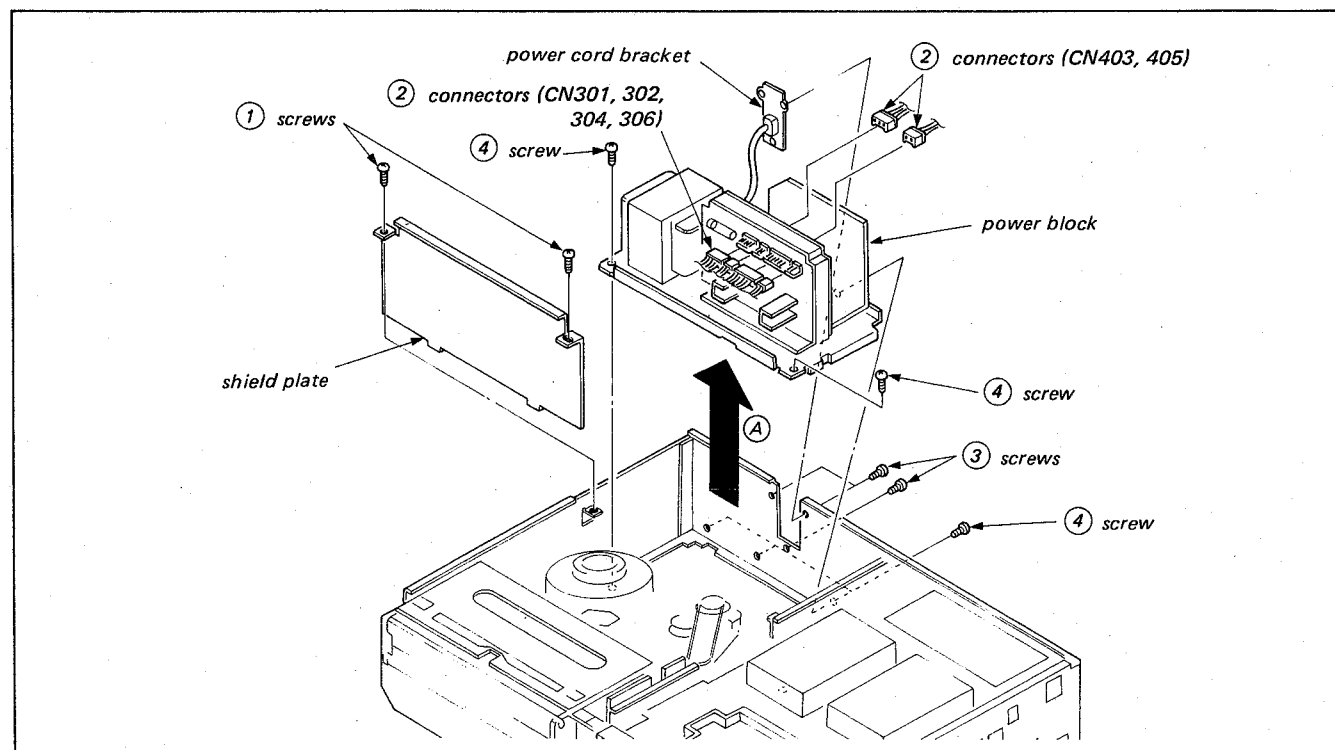
2-2. REMOVAL OF TM BLOCK ASS'Y

- 1) Pull out the four connectors ①.
- 2) Pull out the two connectors ②.
- 3) Remove two screws ③ and the TM-39 board.
- 4) Remove two screws ④ and the TM-block Ass'y.



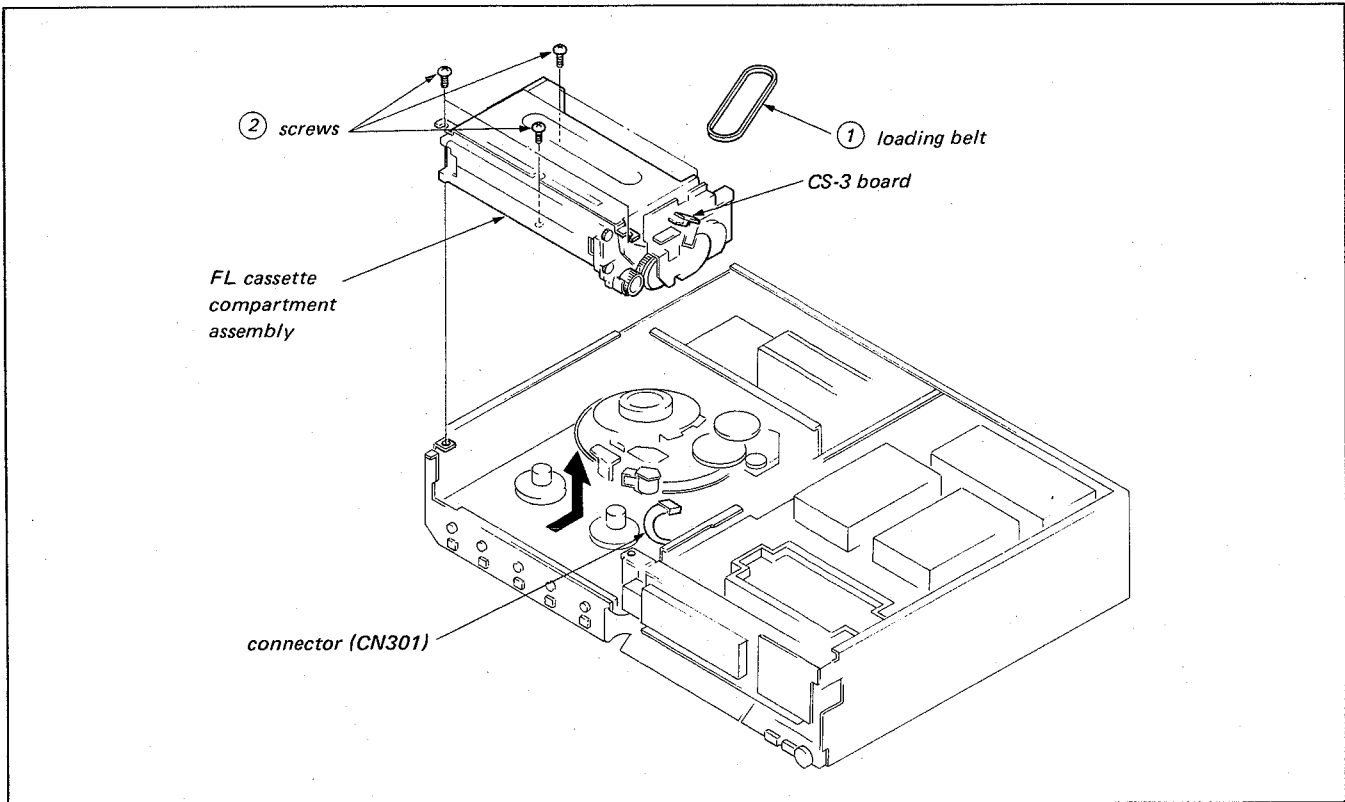
2-3. REMOVAL OF POWER BLOCK

- 1) Remove the two screws ①, and the shield plate.
- 2) Pull out the six connectors ②, (CN301, 302, 304, 306, 403, 405) from the power block side.
- 3) Remove the three screws ③ and the power cord bracket.
- 4) Remove the five screws ④, holding the power block.
- 5) Remove the power block in the direction shown by the arrow ⑤.



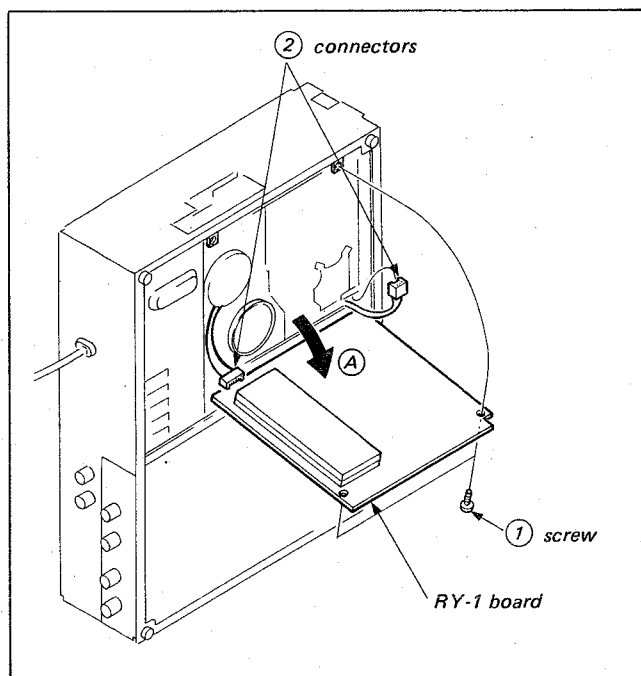
2-4. REMOVAL OF FL CASSETTE COMPARTMENT ASSEMBLY

- 1) Loosen the loading belt ① exerting a force on the threading motor.
- 2) Remove the five mounting screws ② of the FL cassette compartment.
- 3) Disconnect the exposed connector from the CS-3 board (CN301) on the FL cassette compartment.
- 4) Lift the FL cassette compartment assembly in the direction shown by the arrow to remove.

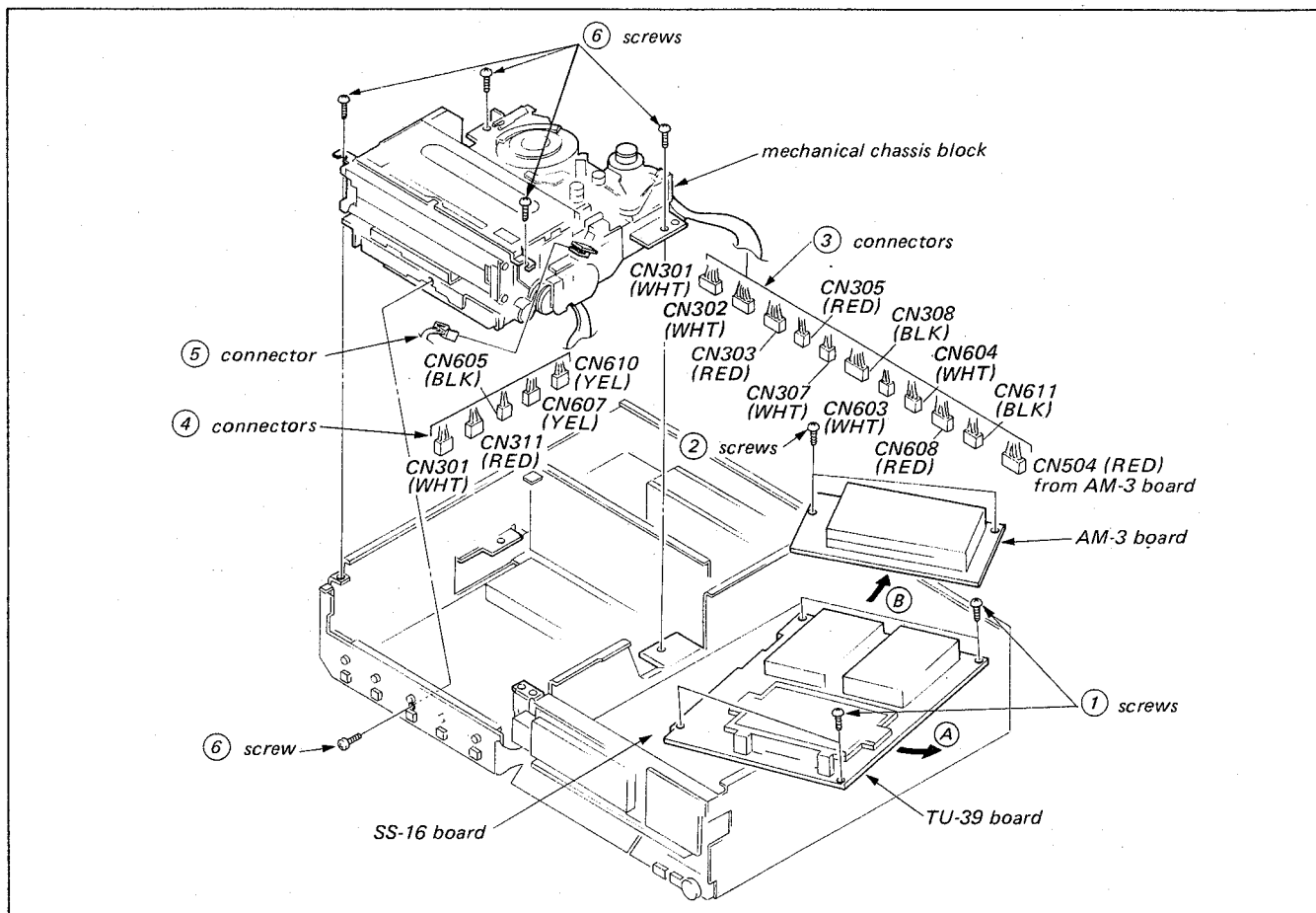


2-5. REMOVAL OF MECHANICAL CHASSIS BLOCK

- (1)
- 1) Stand the set with the right side panel on the bottom.
 - 2) Remove the two screws ①, holding the RY-1 board.
 - 3) Pull out the two connectors ②.
 - 4) Remove the RY-1 board in the direction shown by the arrow ④.

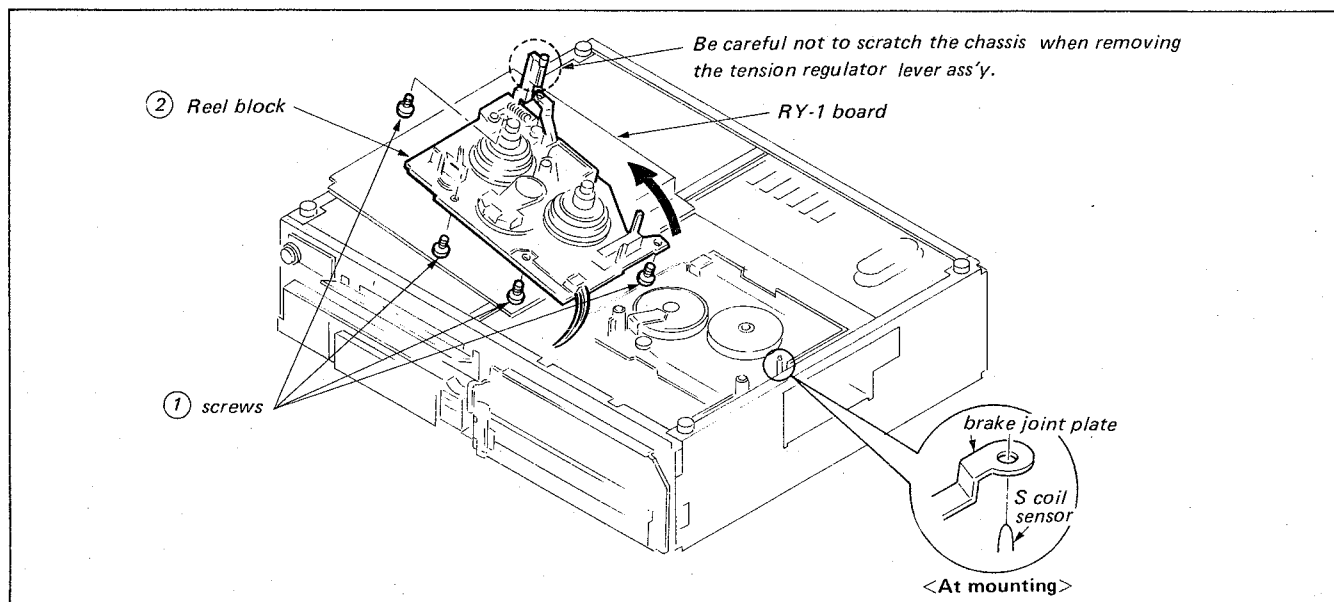


- (2)
- 1) Remove the four screws ① and the TU-39 board in the direction shown by the arrow A.
 - 2) Remove the two screws ② and the AM-3 board in the direction shown by the arrow B.
 - 3) Pull out the ten connectors ③ from the SS-16 board and pull out the rest one from AM-3 board.
 - 4) Pull out the four connectors ④ from the SS-16 board and pull out the connector ⑤.
 - 5) Remove the five screws ⑥ and the mechanical chassis block.



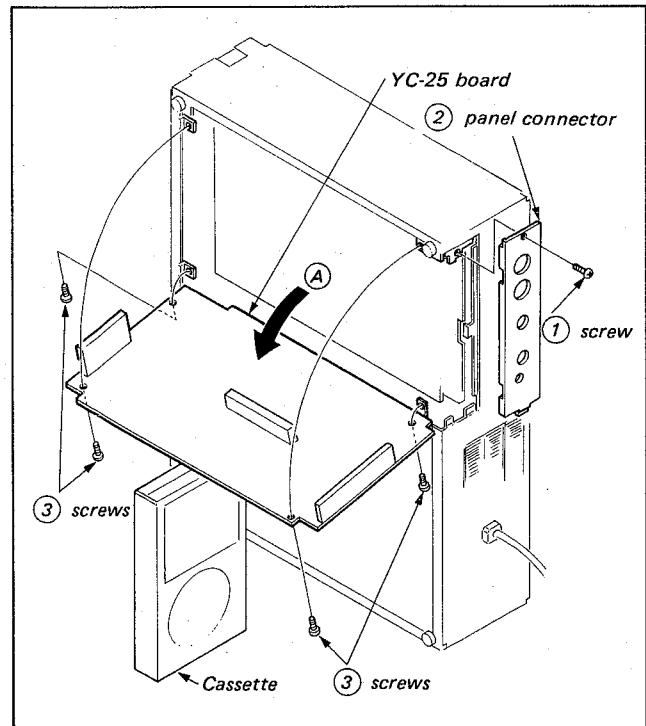
2-6. REMOVAL OF REEL ASS'Y

- 1) Place the set upside down.
- 2) Remove four screws ①.
- 3) Remove the reel block ②.



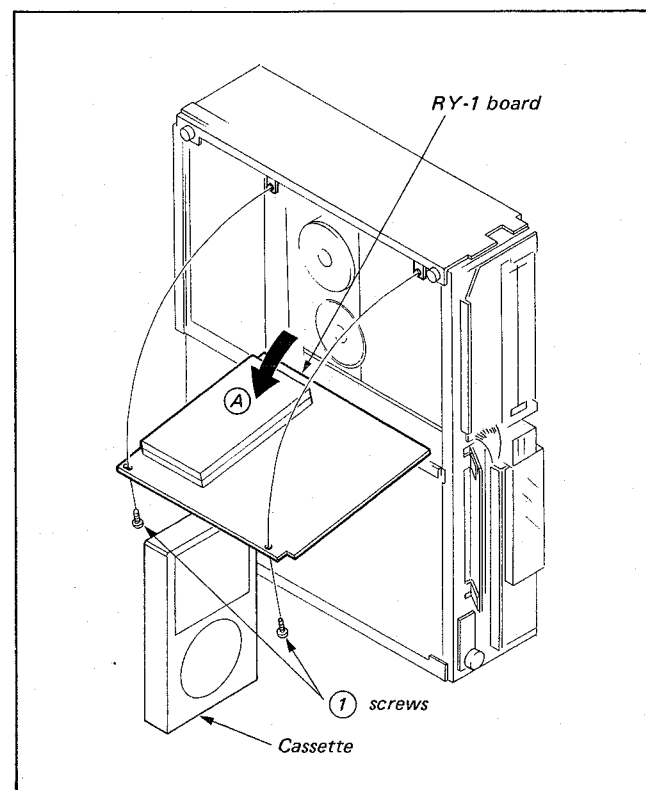
2-7. REMOVAL OF THE YC-25 BOARD

- 1) Stand the set with the power source side on the bottom.
- 2) Remove the screw ① and the panel connector ②.
- 3) Remove the four screws ③, holding the YC-25 board.
- 4) Swing open the YC-25 board in the direction shown by the arrow ④ and rest it on a cassette.



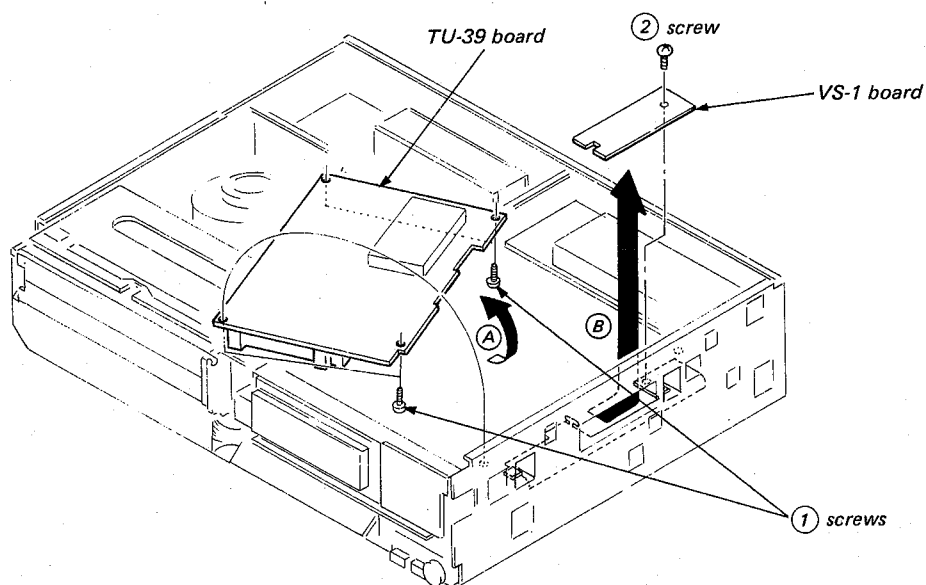
2-8. REMOVAL OF THE RY-1 BOARD

- 1) Stand the set with the right side panel on the bottom.
- 2) Remove the two screws ①, holding the RY-1 board.
- 3) Swing open the RY-1 board in the direction shown by the arrow ④ and rest it on a cassette.



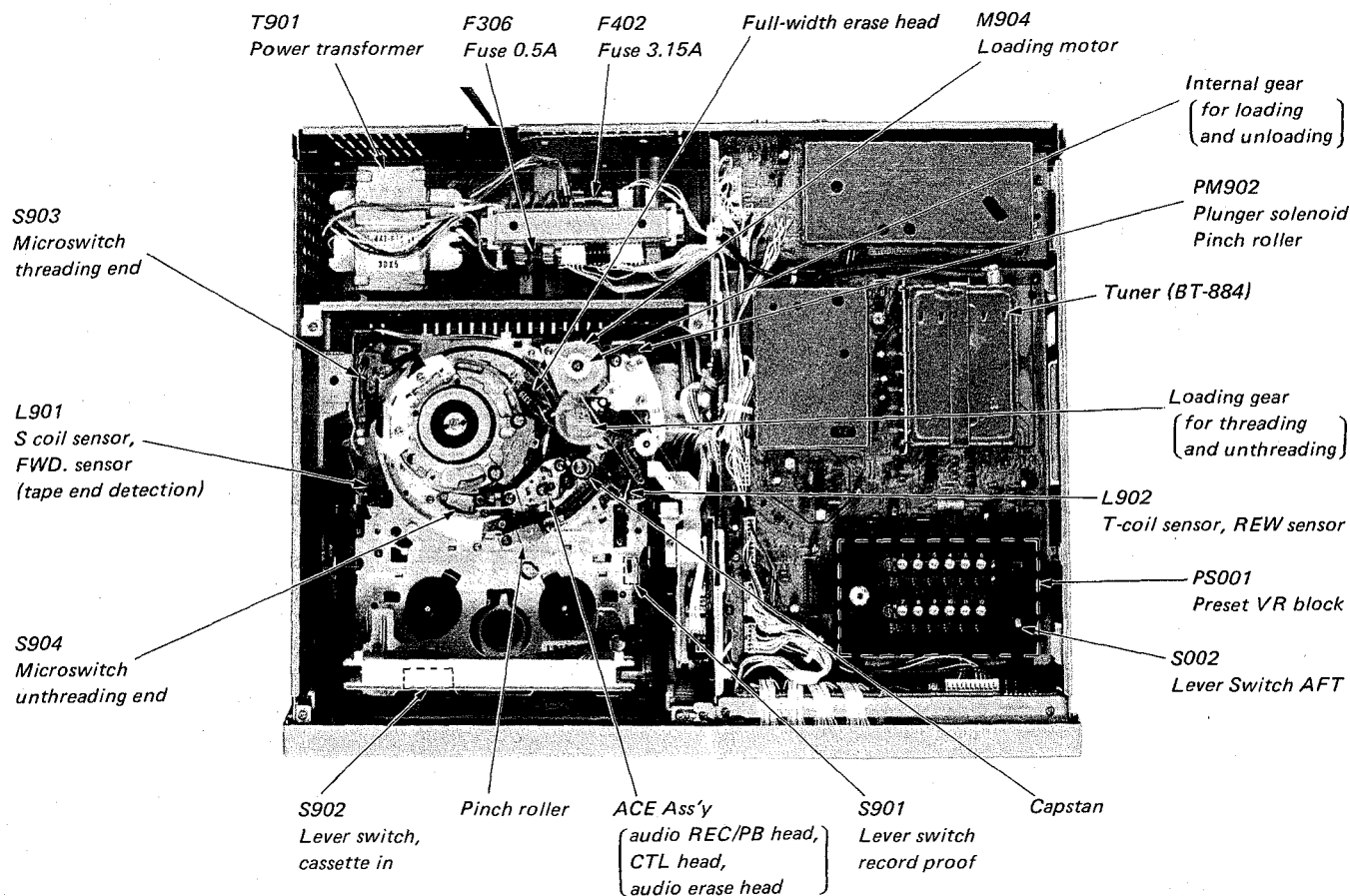
2-9. REMOVAL OF THE TU-39 BOARD AND THE VS-1 BOARD

- 1) Remove the four screws ① holding the TU-39 board.
- 2) Remove the TU-39 board in the direction shown by the arrow ④.
- 3) Remove the screw ② and the VS-1 board in the direction shown by the arrow ⑤.

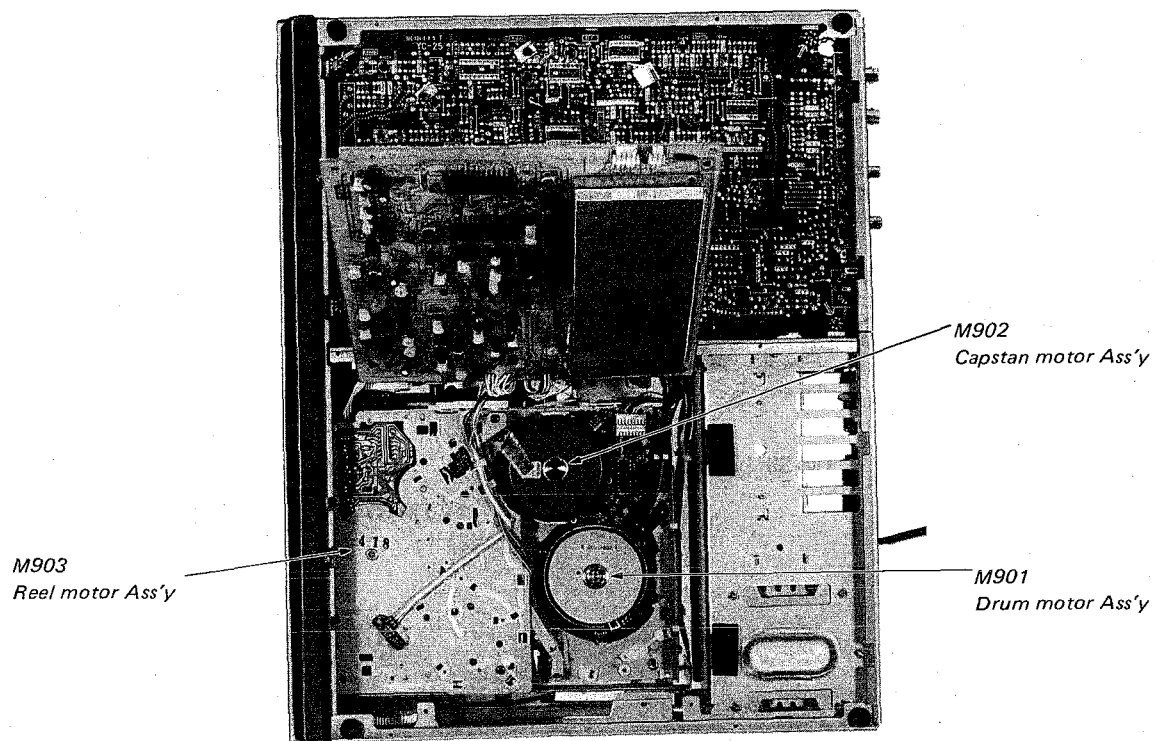


2-10. INTERNAL VIEWS

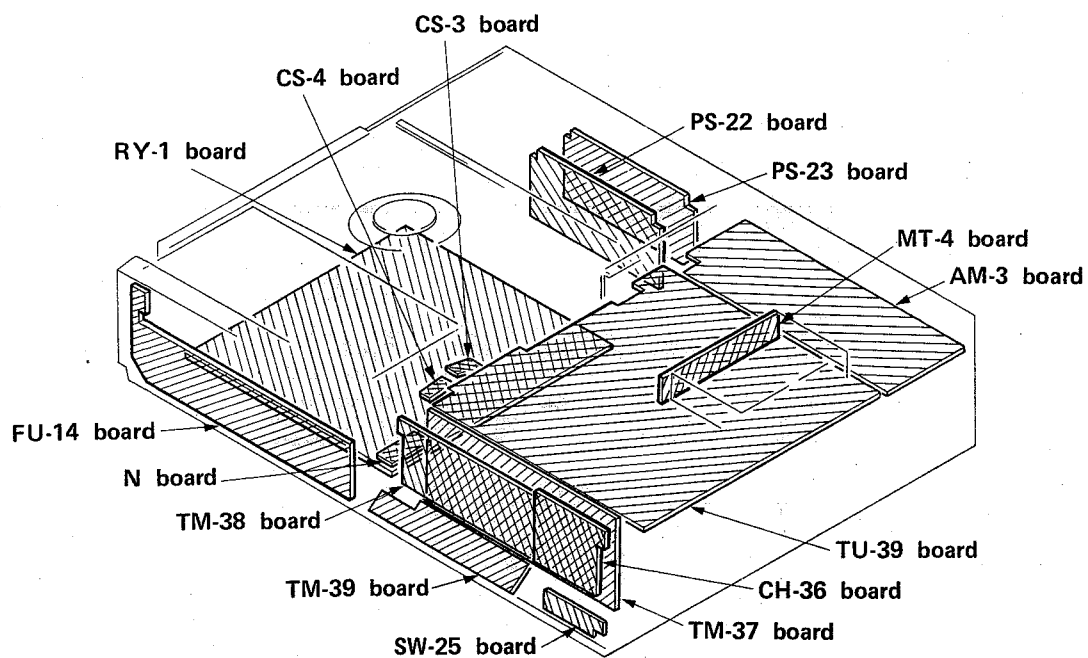
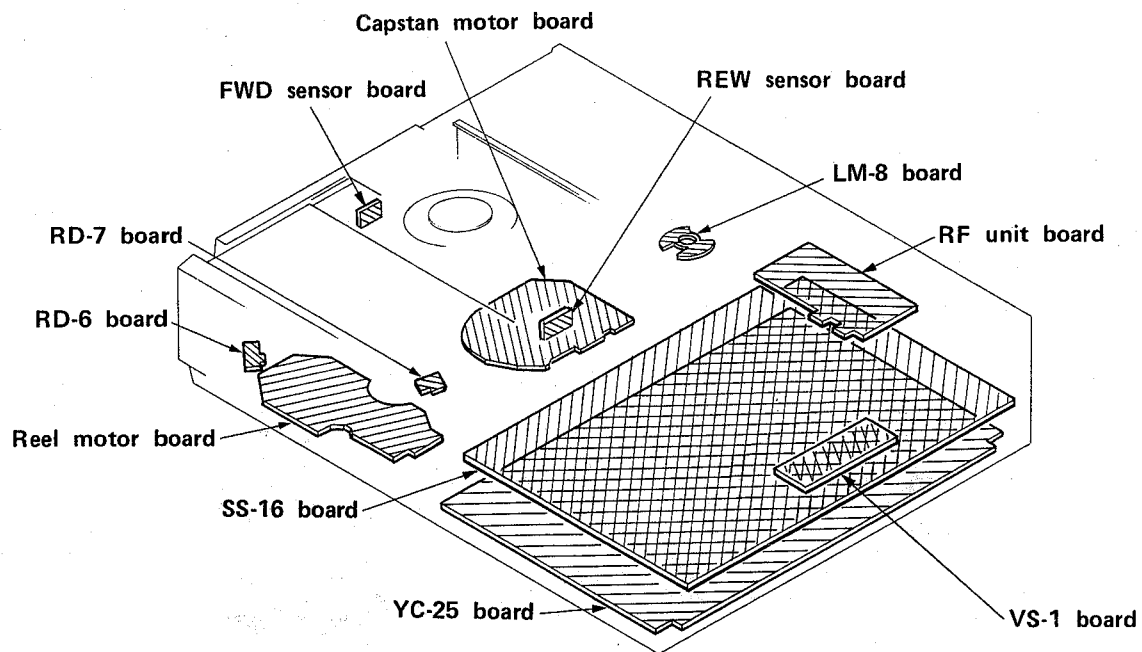
— Top side —



— Bottom side —

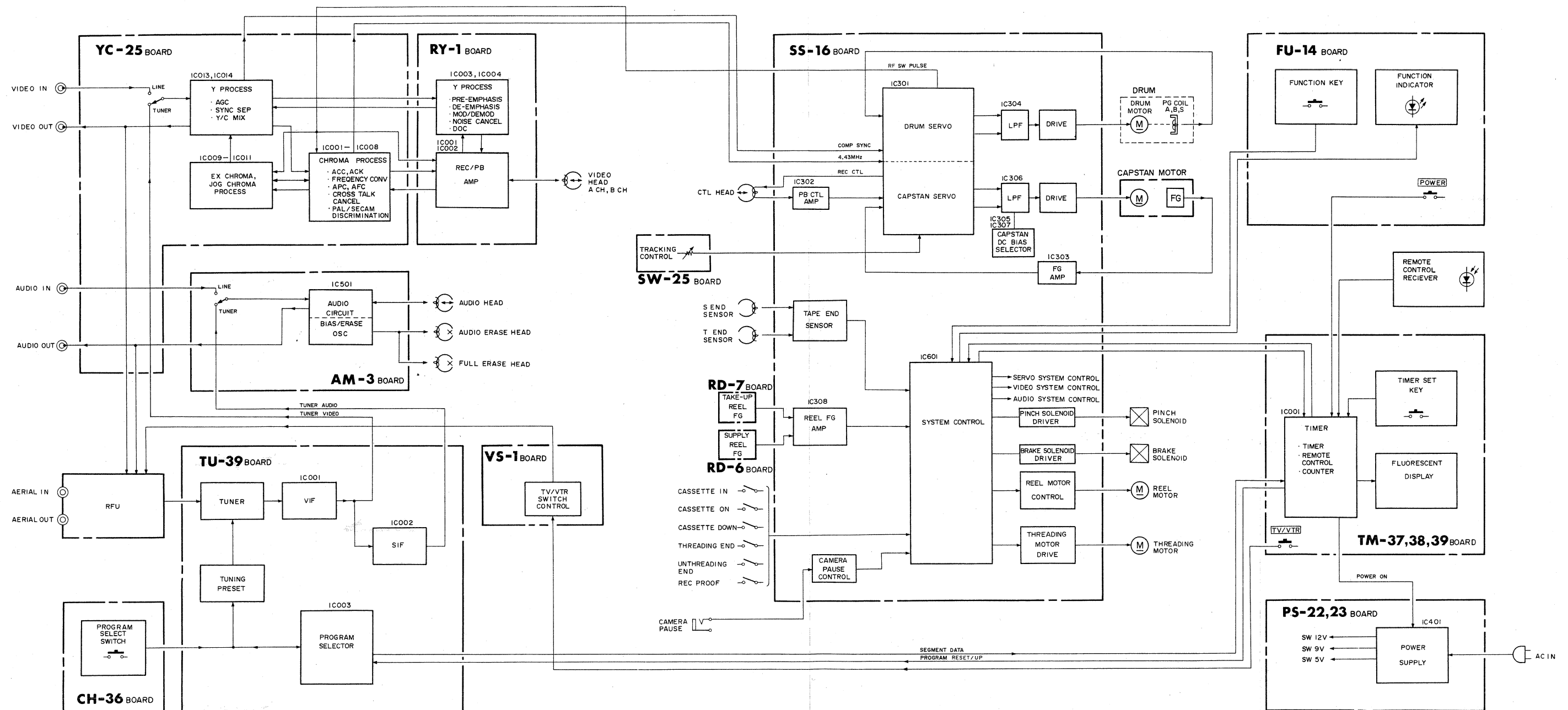


2-11. BOARD ARRANGEMENT



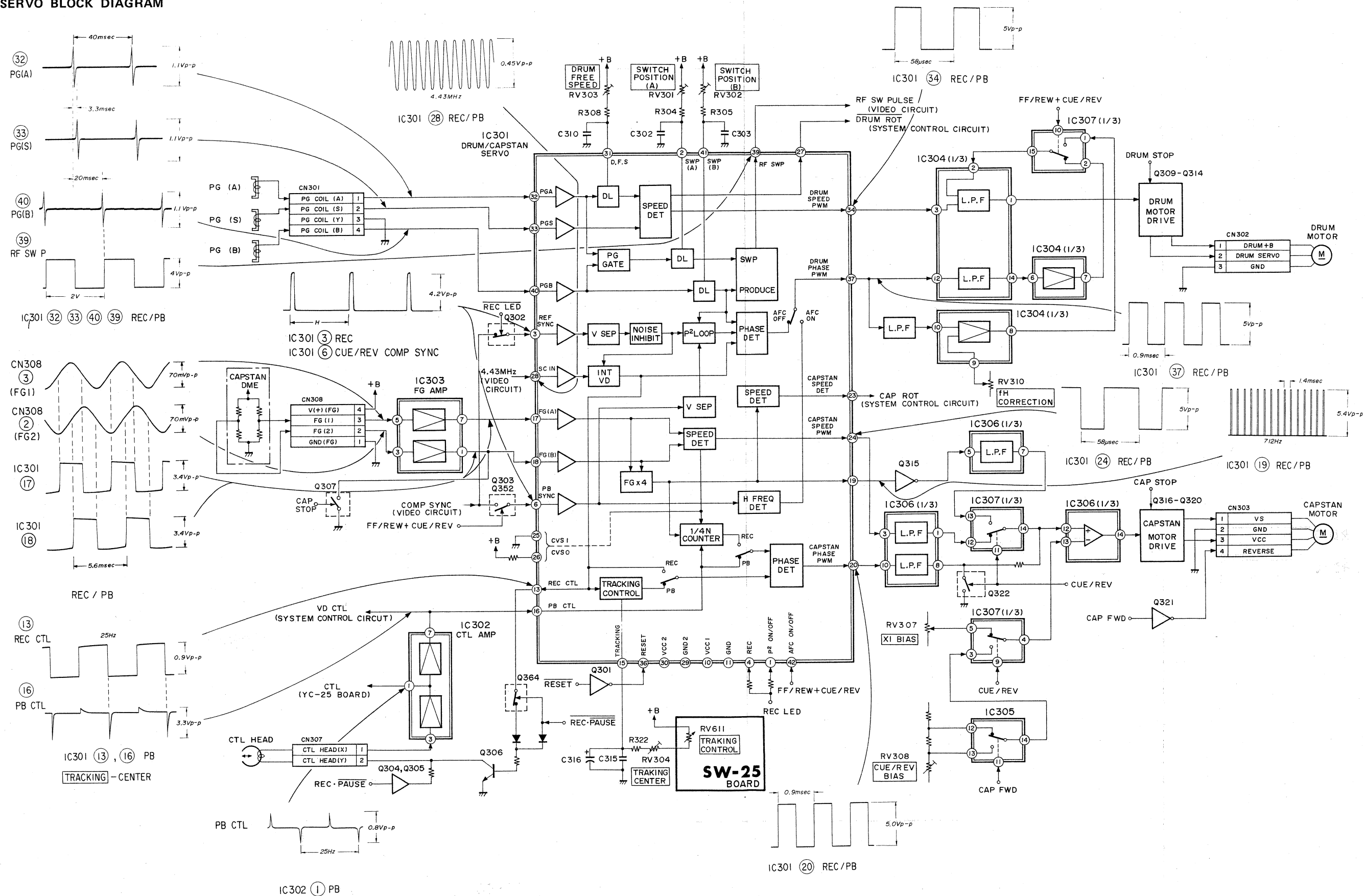
SECTION 3 DIAGRAMS

OVERALL BLOCK DIAGRAM

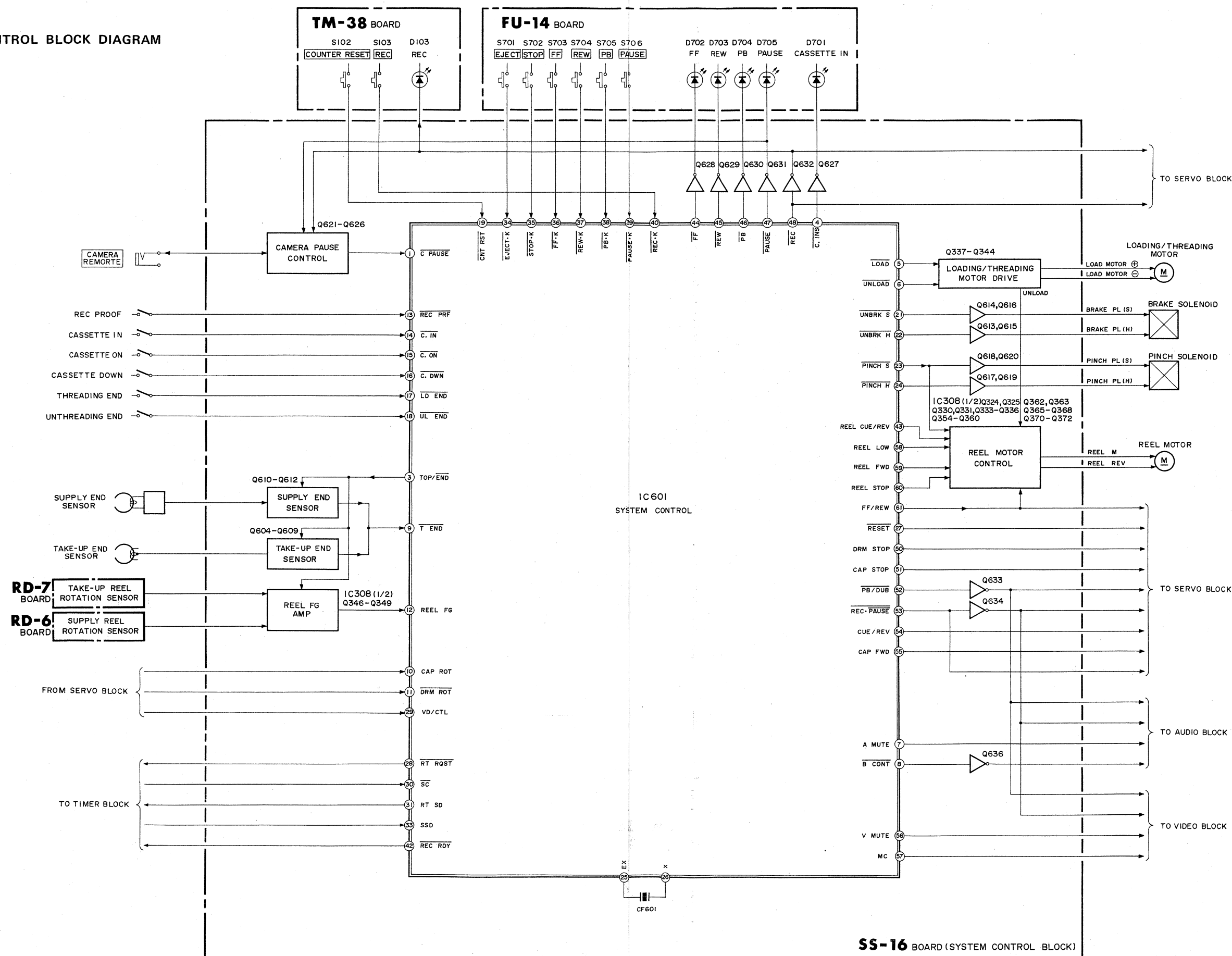


[illegible]

SERVO BLOCK DIAGRAM



SYSTEM CONTROL BLOCK DIAGRAM



SYSTEM CONTROL CIRCUIT AND MECHANISM BLOCK INTERFACE

MODE			EJECTED	LOADING	THREADING	STOP	UN-THREADING	UN-LOADING	FF	REW	PB	PB·PAUSE	PICTURE SEARCH		REC	REC·PAUSE	TIMER REC	FR SEARCH	
SIGNAL	I/O	Pin No.											CUE	REV				CUE	REV
REC PROOF	I	IC601 13pin	H	H	H/L	H/L	H/L	H	H/L	H/L	H/L	H/L	H/L	H/L	L	L	L	H/L	H/L
C·IN	I	IC601 14pin	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
C·ON	I	IC601 15pin	H	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
C·DWN	I	IC601 16pin	H	H	L	L	L	H	L	L	L	L	L	L	L	L	L	L	L
LD END	I	IC601 17pin	H	H	H	L	H	H	L	L	L	L	L	L	L	L	L	L	L
UL END	I	IC601 18pin	L	L	H	H	H	L	H	H	H	H	H	H	H	H	H	H	H
UNBRK S	O	IC601 21pin	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
UNBRK H	O	IC601 22pin	H	H	L	H	L	H	L	L	L	H	L	L	L	H	L	L	L
PINCH S	O	IC601 23pin	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
PINCH H	O	IC601 24pin	H	L	H	H	H	L	H	H	L	H	L	L	L	H	L	H	H
LOAD	O	IC601 5pin	H	L	L	H	H	H	H	H	H	H	H	H	H	H	H	H	H
UNLOAD	O	IC601 6pin	H	H	H	H	L	L	H	H	H	H	H	H	H	H	H	H	H

SYSTEM CONTROL CIRCUIT AND REMOTE CONTROL/TIMER CIRCUIT INTERFACE

MODE			STOP	FF	REW	PB	PB·PAUSE	PICTURE SEARCH		REC	REC·PAUSE	TIMER REC	FR SEARCH	
SIGNAL	I/O	Pin No.						CUE	REV				CUE	REV
RT RQST	I	IC601 28pin												
RTSD	I	IC601 31pin												
COUNTER RESET	I	IC601 19pin												
SSD	O	IC601 33pin												
SC	O	IC601 30pin												
REC READY	O	IC601 42pin	H/L	H	H	H	H	H	H	H	H	L	H	H

SYSTEM CONTROL CIRCUIT AND FUNCTION BLOCK INTE

MODE			STOP	FF	REW
SIGNAL	I/O	Pin No.			
EJECT·K	I	IC601 34pin	H	H	H
STOP·K	I	IC601 35pin	H	H	H
FF·K	I	IC601 36pin	H	H	H
REW·K	I	IC601 37pin	H	H	H
PB·K	I	IC601 38pin	H	H	H
PAUSE·K	I	IC601 39pin	H	H	H
REC·K	I	IC601 40pin	H	H	H
FF	O	IC601 44pin	H	L	H
REW	O	IC601 45pin	H	H	L
PB	O	IC601 46pin	H	H	H
PAUSE	O	IC601 47pin	H	H	H
REC	O	IC601 48pin	H	H	H
C·IN	O	IC601 4pin	L	L	L

SYSTEM CONTROL CIRCUIT AND ITS PERIPHERAL CIRCUI

MODE			STOP	FF	REW
SIGNAL	I/O	Pin No.			
TEND*1	I	IC601 9pin	H	H	H
C·PAUSE*2	I	IC601 1pin	H	H	H
TOP/END	O	IC601 3pin	L	L	H

*1 "L" at tape end.

*2 Camera pause signal.

PB· AUSE	PICTURE SEARCH		REC	REC· PAUSE	TIMER REC	FR SEARCH	
	CUE	REV				CUE	REV
H/L	H/L	H/L	L	L	L	H/L	H/L
L	L	L	L	L	L	L	L
L	L	L	L	L	L	L	L
L	L	L	L	L	L	L	L
L	L	L	L	L	L	L	L
H	H	H	H	H	H	H	H
H	H	H	H	H	H	H	H
H	L	L	L	H	L	L	L
H	H	H	H	H	H	H	H
H	L	L	L	H	L	H	H
H	H	H	H	H	H	H	H
H	H	H	H	H	H	H	H

IMER REC	FR SEARCH	
	CUE	REV
L	H	H

SYSTEM CONTROL CIRCUIT AND FUNCTION BLOCK INTERFACE

MODE			STOP	FF	REW	PB	PB· PAUSE	PICTURE SEARCH		REC	REC· PAUSE	TIMER REC	FR SEARCH	
SIGNAL	I/O	Pin No.						CUE	REV				CUE	REV
EJECT·K	I	IC601 34pin	H	H	H	H	H	H	H	H	H	H	H	H
STOP·K	I	IC601 35pin	H	H	H	H	H	H	H	H	H	H	H	H
FF·K	I	IC601 36pin	H	H	H	H	H	L	H	H	H	H	L	H
REW·K	I	IC601 37pin	H	H	H	H	H	H	L	H	H	H	H	L
PB·K	I	IC601 38pin	H	H	H	H	H	H	H	H	H	H	H	H
PAUSE·K	I	IC601 39pin	H	H	H	H	H	H	H	H	H	H	H	H
REC·K	I	IC601 40pin	H	H	H	H	H	H	H	H	H	H	H	H
FF	O	IC601 44pin	H	L	H	H	H	L	H	H	H	H	L	H
REW	O	IC601 45pin	H	H	L	H	H	H	L	H	H	H	H	L
PB	O	IC601 46pin	H	H	H	L	L	L	L	H	H	H	L	L
PAUSE	O	IC601 47pin	H	H	H	H	L	H	H	H	L	H	H	H
REC	O	IC601 48pin	H	H	H	H	H	H	H	L	L	L	H	H
C·IN	O	IC601 4pin	L	L	L	L	L	L	L	L	L	L	L	L

SYSTEM CONTROL CIRCUIT AND ITS PERIPHERAL CIRCUIT INTERFACE

MODE			STOP	FF	REW	PB	PB· PAUSE	PICTURE SEARCH		REC	REC· PAUSE	TIMER REC	FR SEARCH	
SIGNAL	I/O	Pin No.						CUE	REV				CUE	REV
TEND*1	I	IC601 9pin	H	H	H	H	H	H	H	H	H	H	H	H
C·PAUSE*2	I	IC601 1pin	H	H	H	H	H	H	H	H	H	H	H	H
TOP/END	O	IC601 3pin	L	L	H	L	L	L	H	L	L	L	L	H

*1 “L” at tape end.

*2 Camera pause signal.

SYSTEM CONTROL CIRCUIT AND REEL MOTOR CONTROL CIRCUIT INTERFACE

MODE			EJECTED	LOADING	THREADING	STOP	UN-THREADING	UN-LOADING	FF	REW	PB	PB·PAUSE	PICTURE SEARCH		REC	REC·PAUSE	TIMER REC	FR SEARCH	
													CUE	REV				CUE	REV
SIGNAL	I/O	Pin No.																	
REEL FG	I	IC601 12pin																	
REEL LOW	O	IC601 58pin	L	L	H	L	H	L	L	L	H	H	L	L	H	H	H	H	H
REEL FWD	O	IC601 59pin	H	H	H	H	L	H	H	L	H	H	H	L	H	H	H	H	L
REEL STOP	O	IC601 60pin	H	H	L	H	L	H	L	L	L	H	L	L	L	H	L	L	L
FF/REW	O	IC601 61pin	L	L	L	L	L	L	H	H	L	L	L	L	L	L	L	H	H
REEL CUE/REV	O	IC601 43pin	L	L	L	L	L	L	L	L	L	L	H	H	L	L	L	L	L
PINCH S	O	IC601 23pin	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H
TOP/END	O	IC601 3pin	L	L	L	L	L	L	L	H	L	L	L	H	L	L	L	L	H
UNLOAD	O	IC601 6pin	H	H	H	H	L	L	H	H	H	H	H	H	H	H	H	H	H

SYSTEM CONTROL CIRCUIT AND SERVO CIRCUIT

MODE			STOP	FF
•SIGNAL	I/O	Pin No.		
DRUM ROT	I	IC601 11pin	H	L
CAP ROT	I	IC601 10pin	L	L
VD/CTL	I	IC601 29pin		CTL
DRUM STOP	O	IC601 50pin	H	L
CAP STOP	O	IC601 51pin	H	H
PB + DUB	O	IC601 52pin	H	H
REC·PAUSE	O	IC601 53pin	H	H
CUE/REV	O	IC601 54pin	L	L
CAP FWD	O	IC601 55pin	H	H
194 RESET*1	O	IC601 27pin	H	H

*1 Reset signal for CX194.

SYSTEM CONTROL CIRCUIT AND VIDEO CIRCUIT INTERFACE

MODE			STOP (E·E)	FF	REW	PB	PB·PAUSE	PICTURE SEARCH		REC	REC·PAUSE	TIMER REC	FR SEARCH	
								CUE	REV				CUE	REV
SIGNAL	I/O	Pin No.												
V MUTE	O	IC601 56pin	L	L	L	L	L	L	L	L	L	L	L	L
MC	O	IC601 57pin	L	L	L	L	H	H	H	L	L	L	H	H
REC·PAUSE	O	IC601 53pin	H	H	H	H	H	H	H	L	H	L	H	H
PB + DUB	O	IC601 52pin	H	H	H	L	L	L	L	H	H	H	L	L

SYSTEM CONTROL CIRCUIT AND AUDIO CIRCUIT

MODE			STOP (E·E)	FF
SIGNAL	I/O	Pin No.		
A MUTE	O	IC601 7pin	L	L
B CONT	O	IC601 8pin	H	H
REC·PAUSE	O	IC601 53pin	H	H
PB + DUB	O	IC601 52pin	H	H

SYSTEM CONTROL CIRCUIT AND SERVO CIRCUIT INTERFACE

PB· AUSE	PICTURE SEARCH		REC	REC· PAUSE	TIMER REC	FR SEARCH	
	CUE	REV				CUE	REV
H	L	L	H	H	H	H	H
H	H	L	H	H	H	H	L
H	L	L	L	H	L	L	L
L	L	L	L	L	L	H	H
L	H	H	L	L	L	L	L
H	H	H	H	H	H	H	H
L	L	H	L	L	L	L	H
H	H	H	H	H	H	H	H

MODE			STOP	FF	REW	PB	PB· PAUSE	PICTURE SEARCH		REC	REC· PAUSE	TIMER REC	FR SEARCH	
·SIGNAL	I/O	Pin No.						CUE	REV				CUE	REV
DRUM ROT	I	IC601 11pin	H	L	L	L	L	L	L	L	L	L	L	L
CAP ROT	I	IC601 10pin	L	L	L	H	H	H	H	H	H	H	L	L
VD/CTL	I	IC601 29pin		CTL	CTL	CTL		CTL	CTL	VD		VD	CTL	CTL
DRUM STOP	O	IC601 50pin	H	L	L	L	L	L	L	L	L	L	L	L
CAP STOP	O	IC601 51pin	H	H	H	L	L	L	L	L	L	L	H	H
PB + DUB	O	IC601 52pin	H	H	H	L	L	L	L	H	H	H	L	L
REC·PAUSE	O	IC601 53pin	H	H	H	H	H	H	H	L	H	L	H	H
CUE/REV	O	IC601 54pin	L	L	L	L	L	H	H	L	L	L	L	L
CAP FWD	O	IC601 55pin	H	H	H	H	H	H	L	H	H	H	H	H
194 RESET*1	O	IC601 27pin	H	H	H	H	H	H	H	H	H	H	H	H

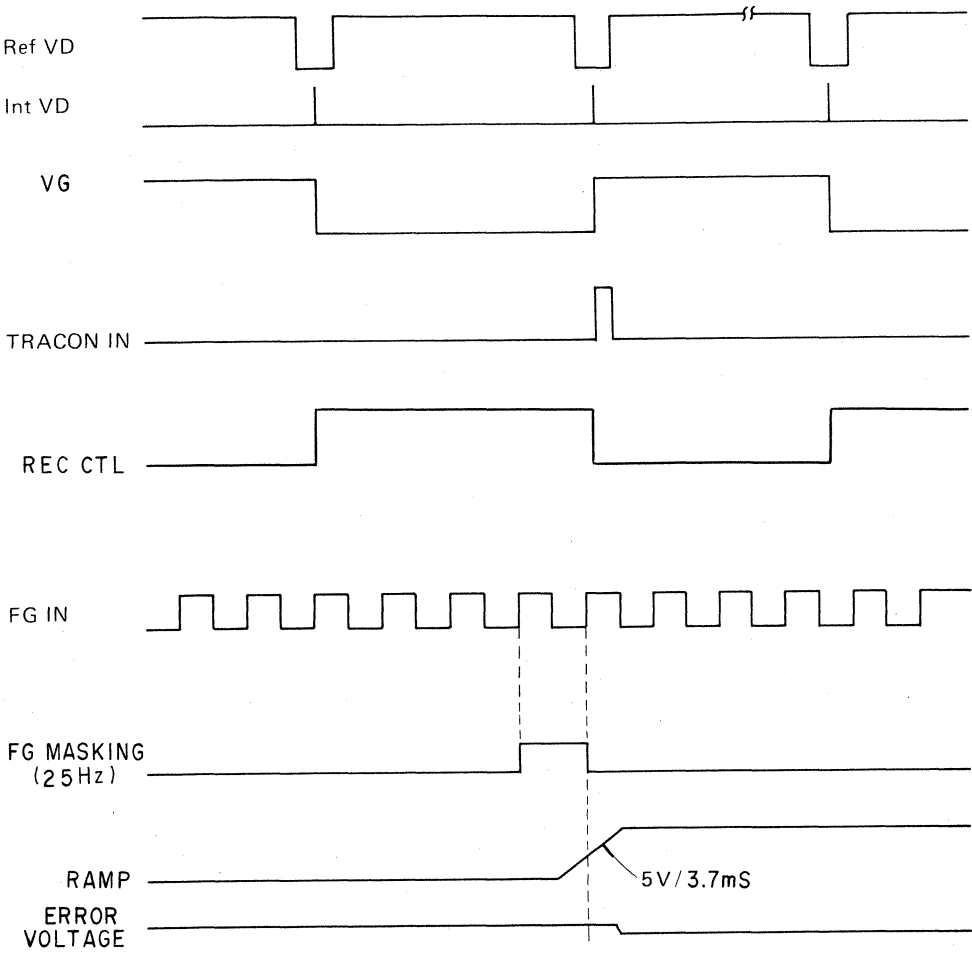
*1 Reset signal for CX194.

SYSTEM CONTROL CIRCUIT AND AUDIO CIRCUIT INTERFACE

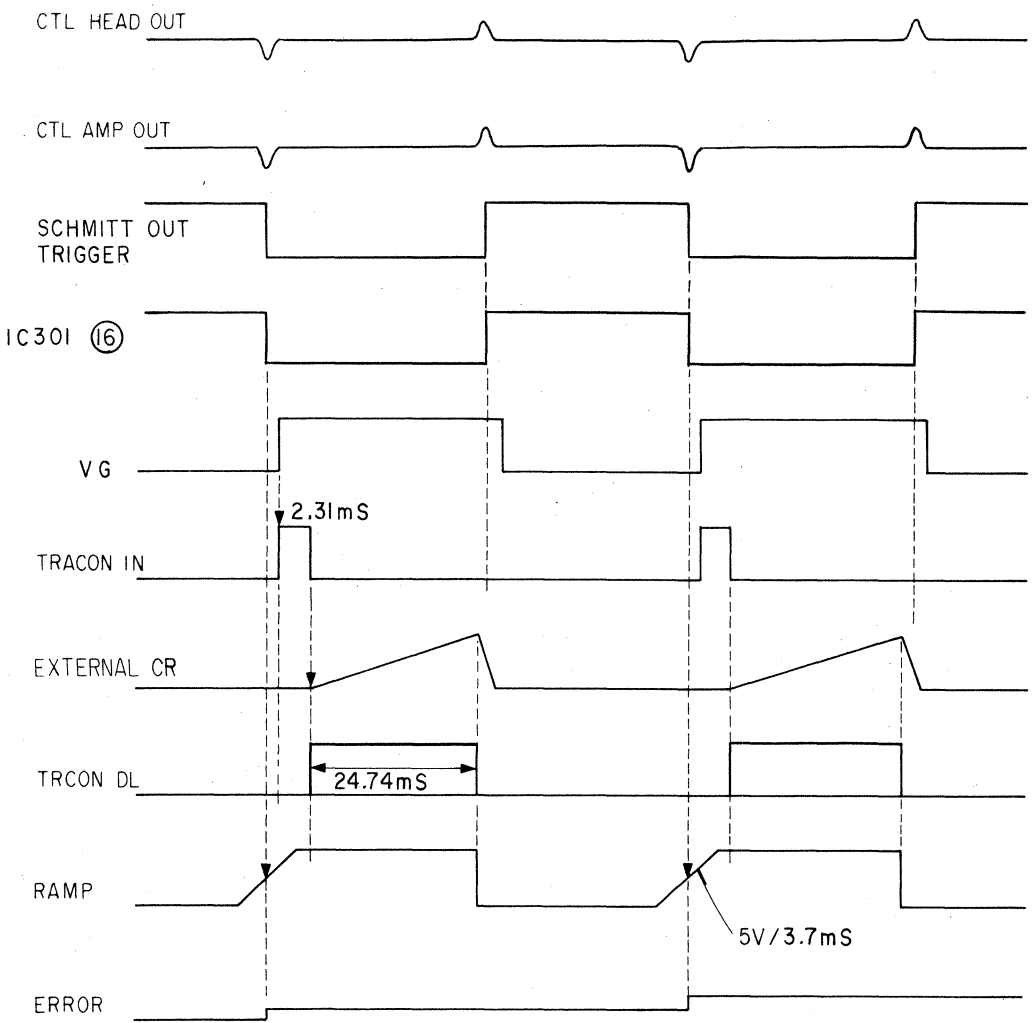
IMER REC	FR SEARCH	
	CUE	REV
L	L	L
L	H	H
L	H	H
H	L	L

MODE			STOP (E-E)	FF	REW	PB	PB· PAUSE	PICTURE SEARCH		REC	REC· PAUSE	TIMER REC	FR SEARCH	
SIGNAL	I/O	Pin No.						CUE	REV				CUE	REV
A MUTE	O	IC601 7pin	L	L	L	L	H	H	H	L	L	L	H	H
B CONT	O	IC601 8pin	H	H	H	H	H	H	H	L	H	L	H	H
REC·PAUSE	O	IC601 53pin	H	H	H	H	H	H	H	L	H	L	H	H
PB + DUB	O	IC601 52pin	H	H	H	L	L	L	L	H	H	H	L	L

CAPSTAN PHASE SYSTEM TIMING CHART (REC)



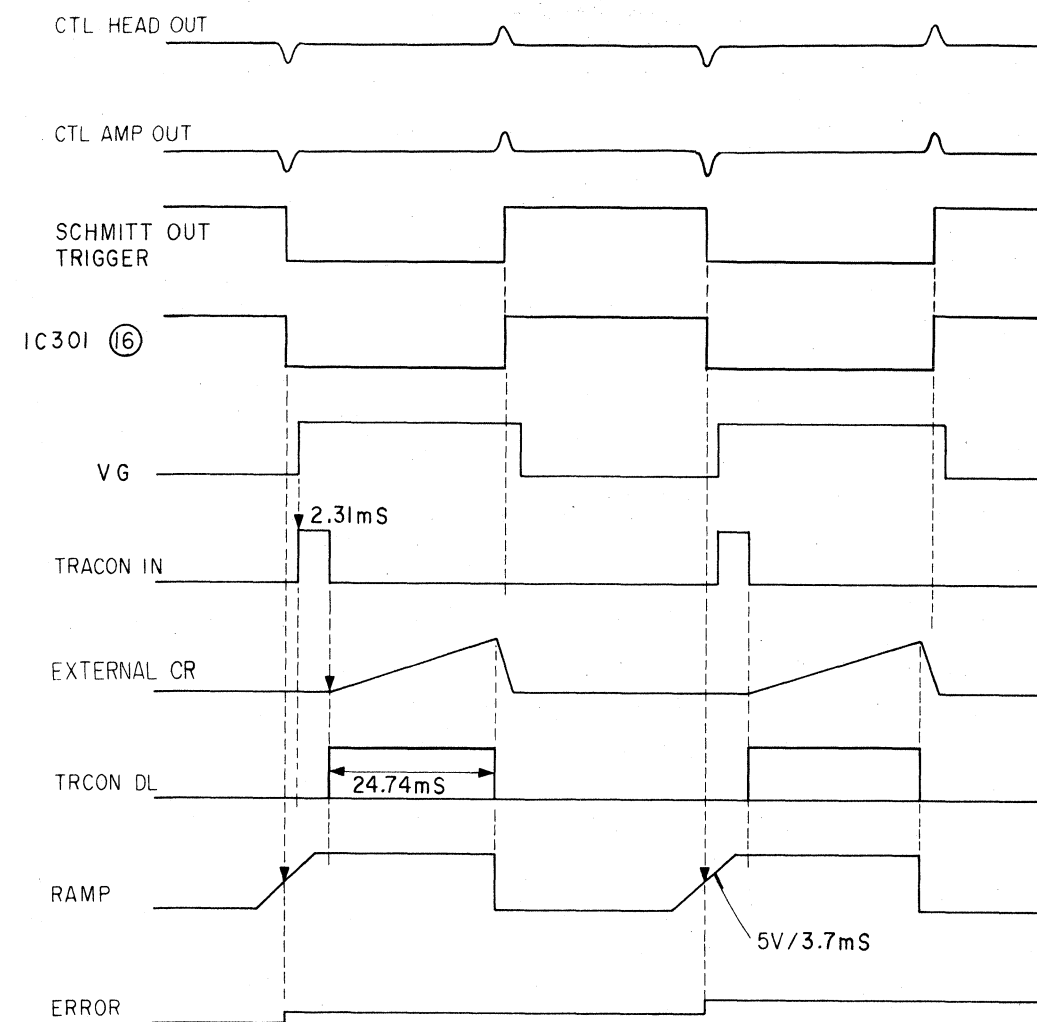
CAPSTAN PHASE SYSTEM TIMING CHART (PB)



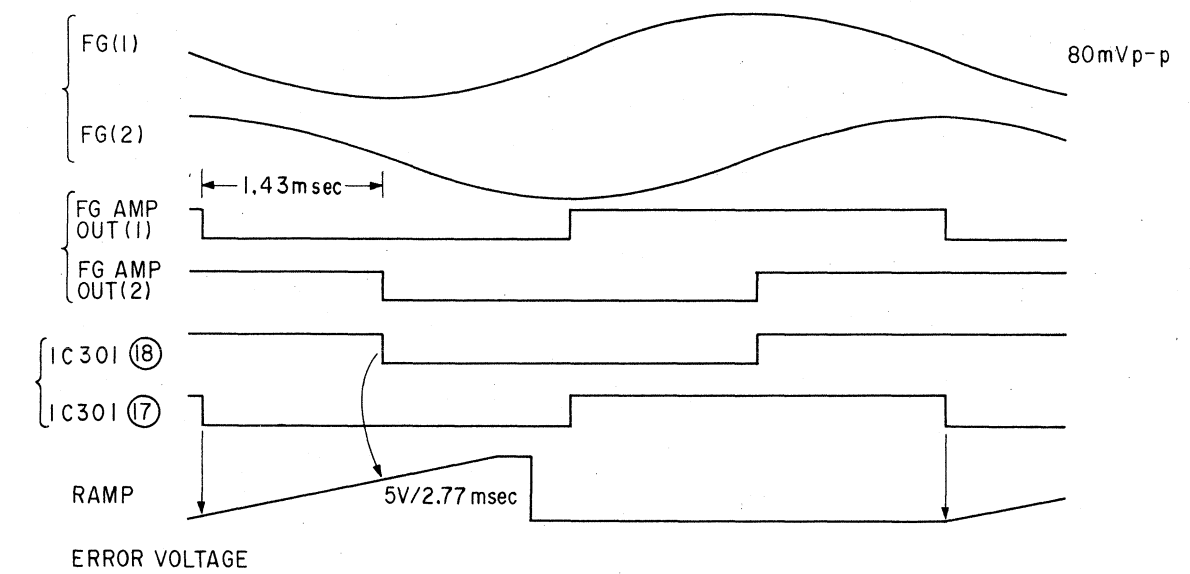
CAPST

FC
FC
FC
FC
IC301
IC302
RA
ER
DRUM

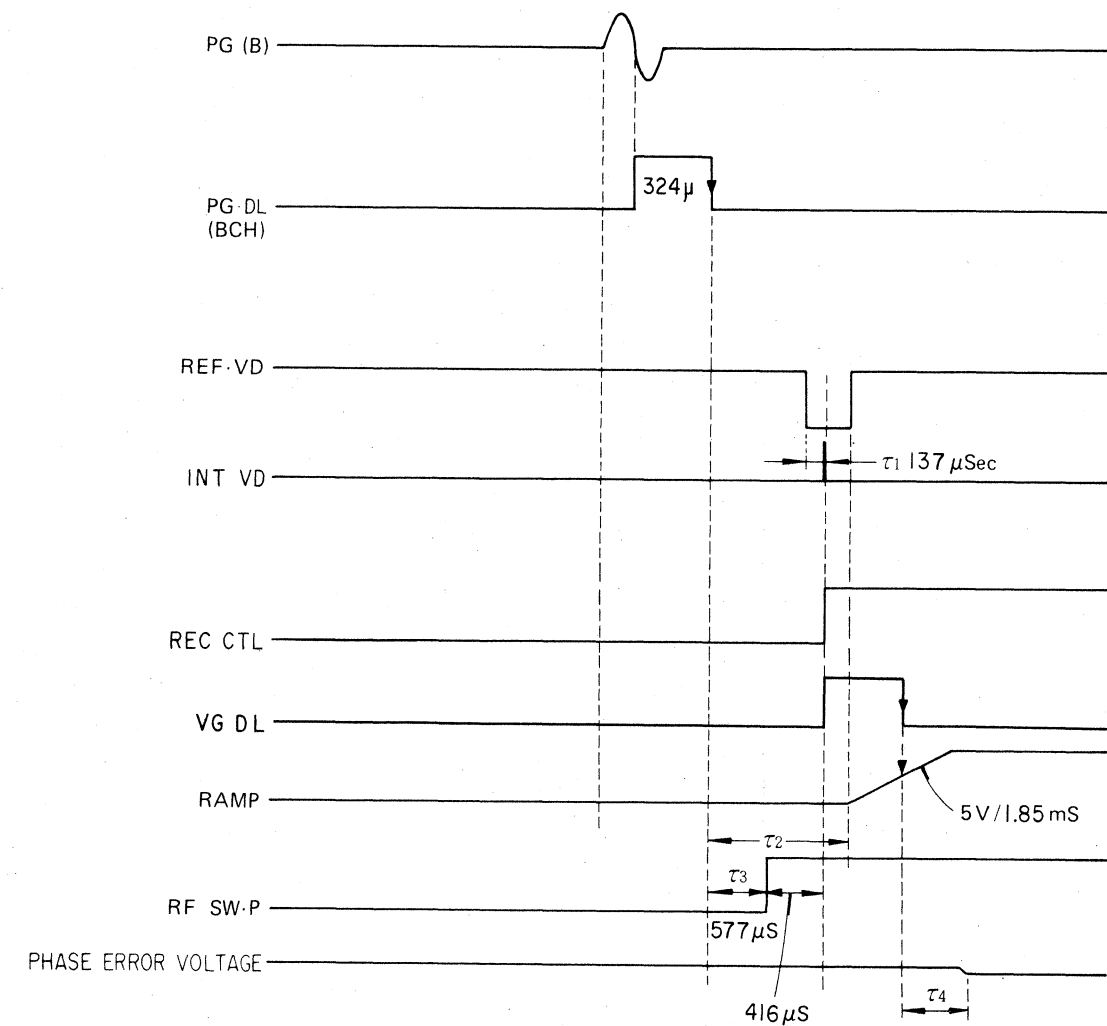
CAPSTAN PHASE SYSTEM TIMING CHART (PB)



CAPSTAN SPEED SYSTEM TIMING CHART

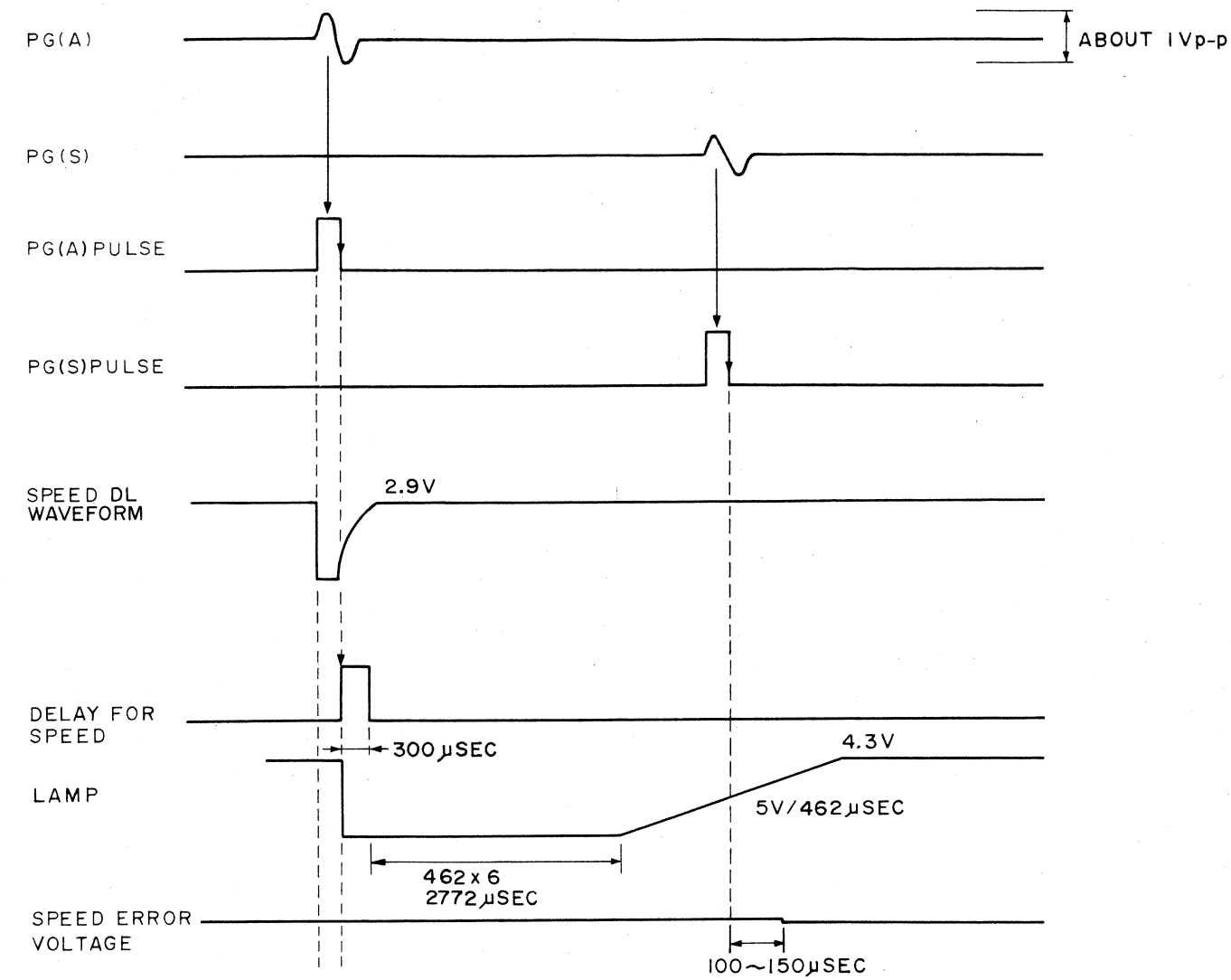


DRUM PHASE SYSTEM TIMING CHART

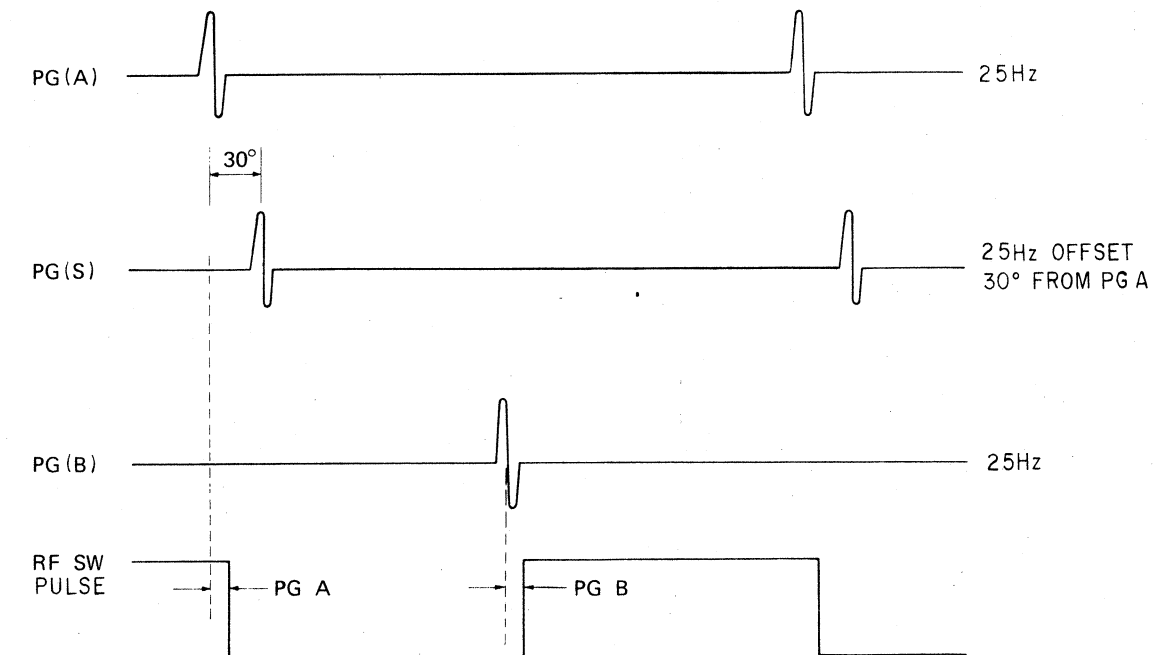


τ_1 REF V D DETECTION DELAY TIME
 $\tau_{2,3}$ DIGITAL DL
 τ_4 DATA EXCHANGE TIME

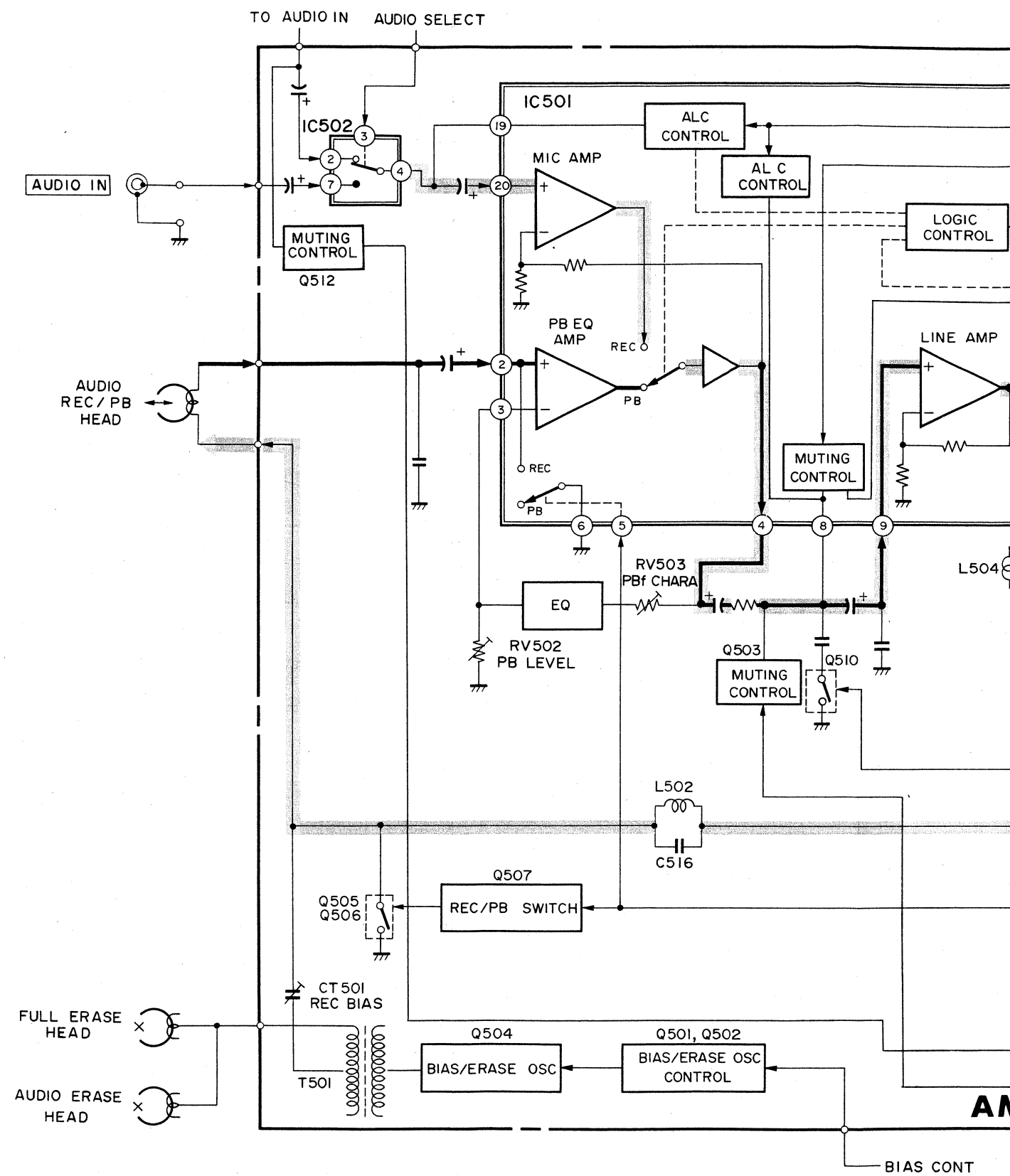
DRUM SPEED SYSTEM TIMING CHART



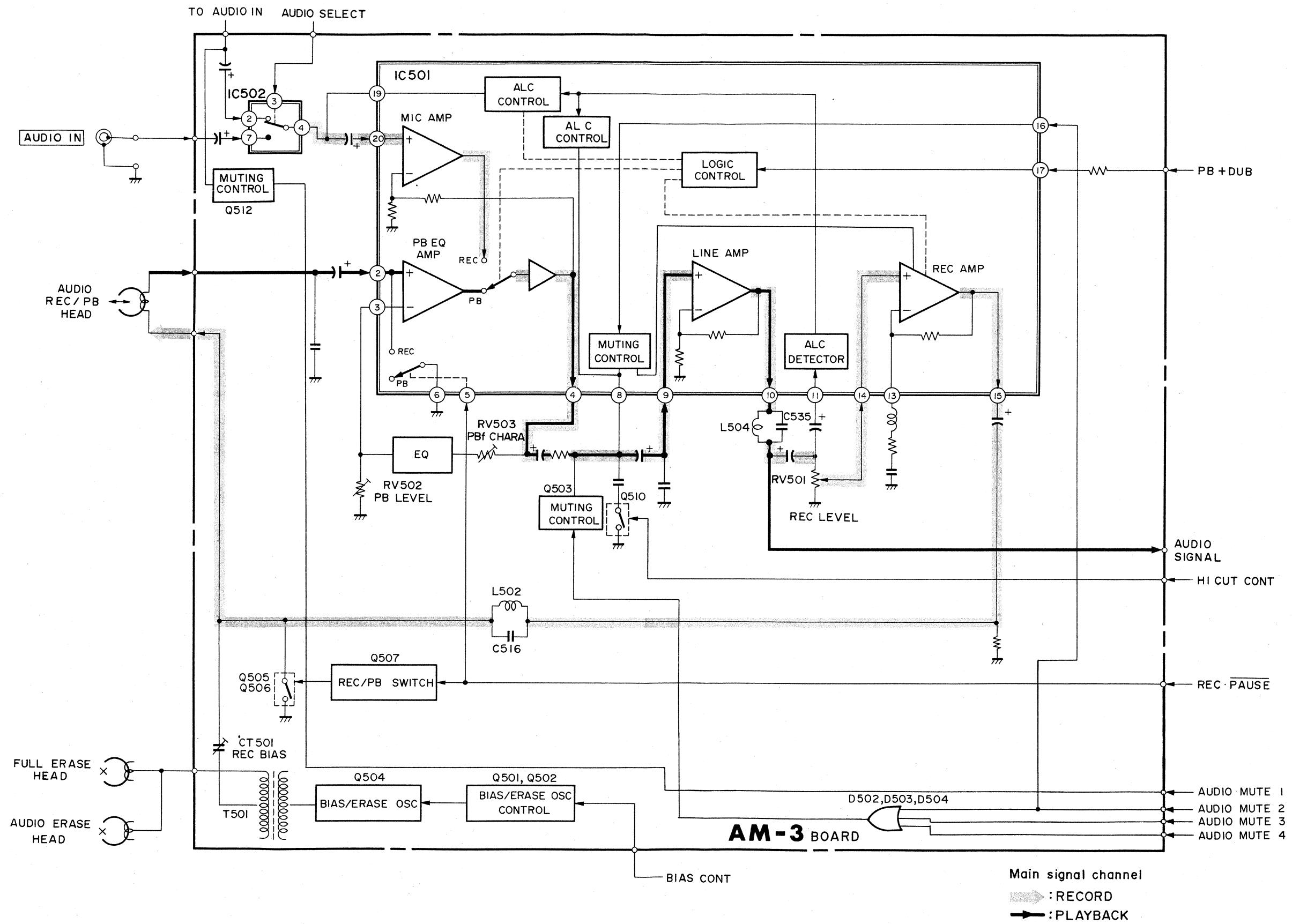
PG SIGNAL TIMING CHART



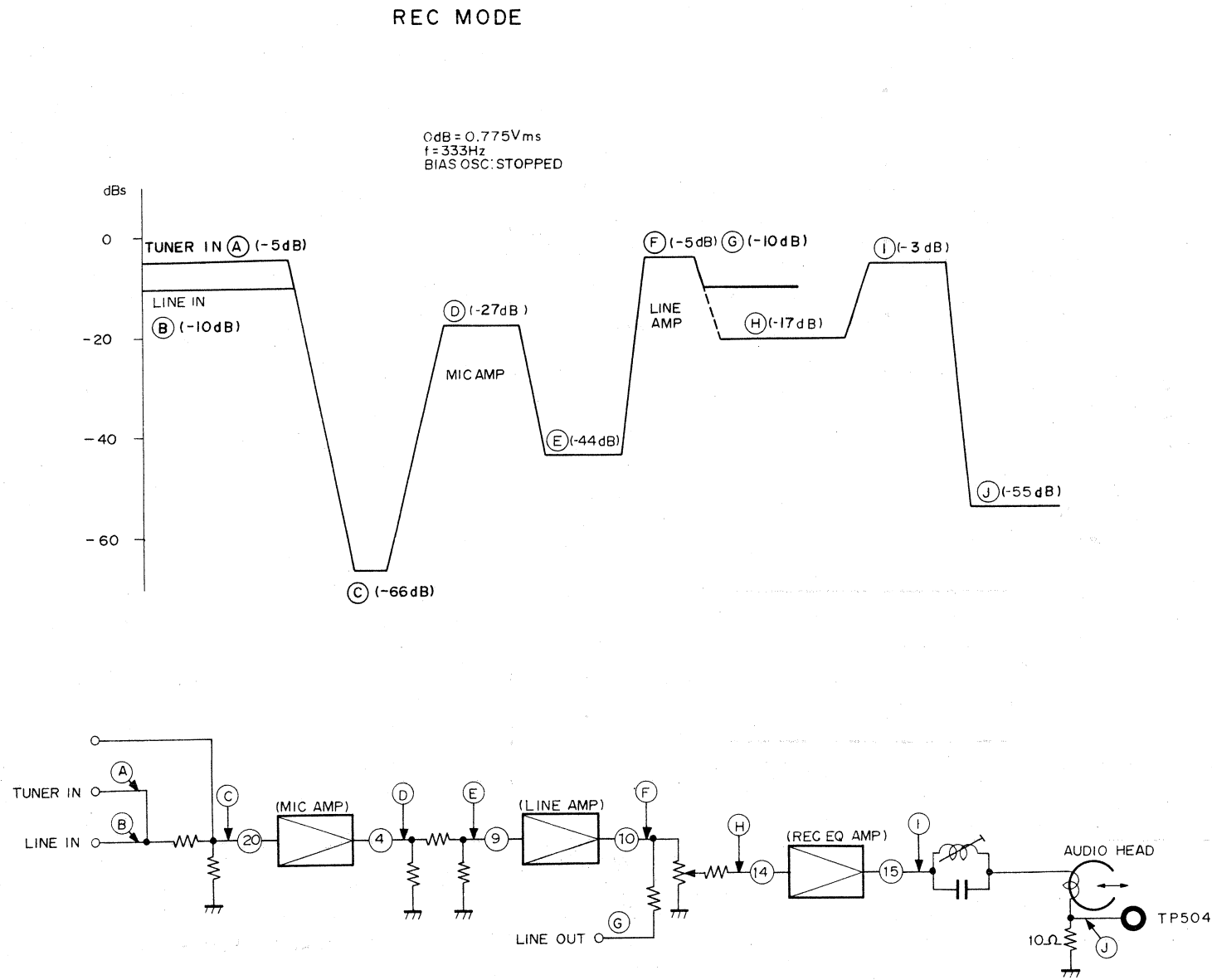
AUDIO BLOCK DIAGRAM



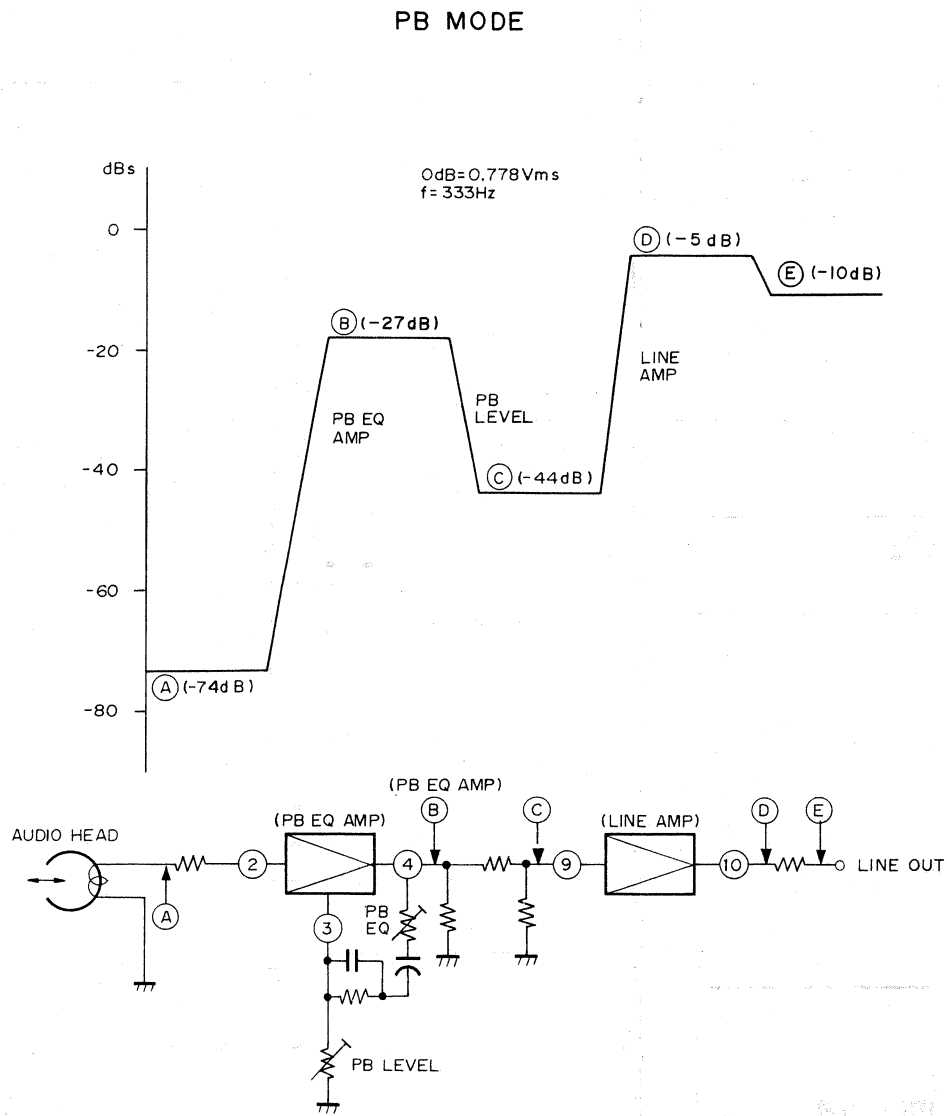
AUDIO BLOCK DIAGRAM



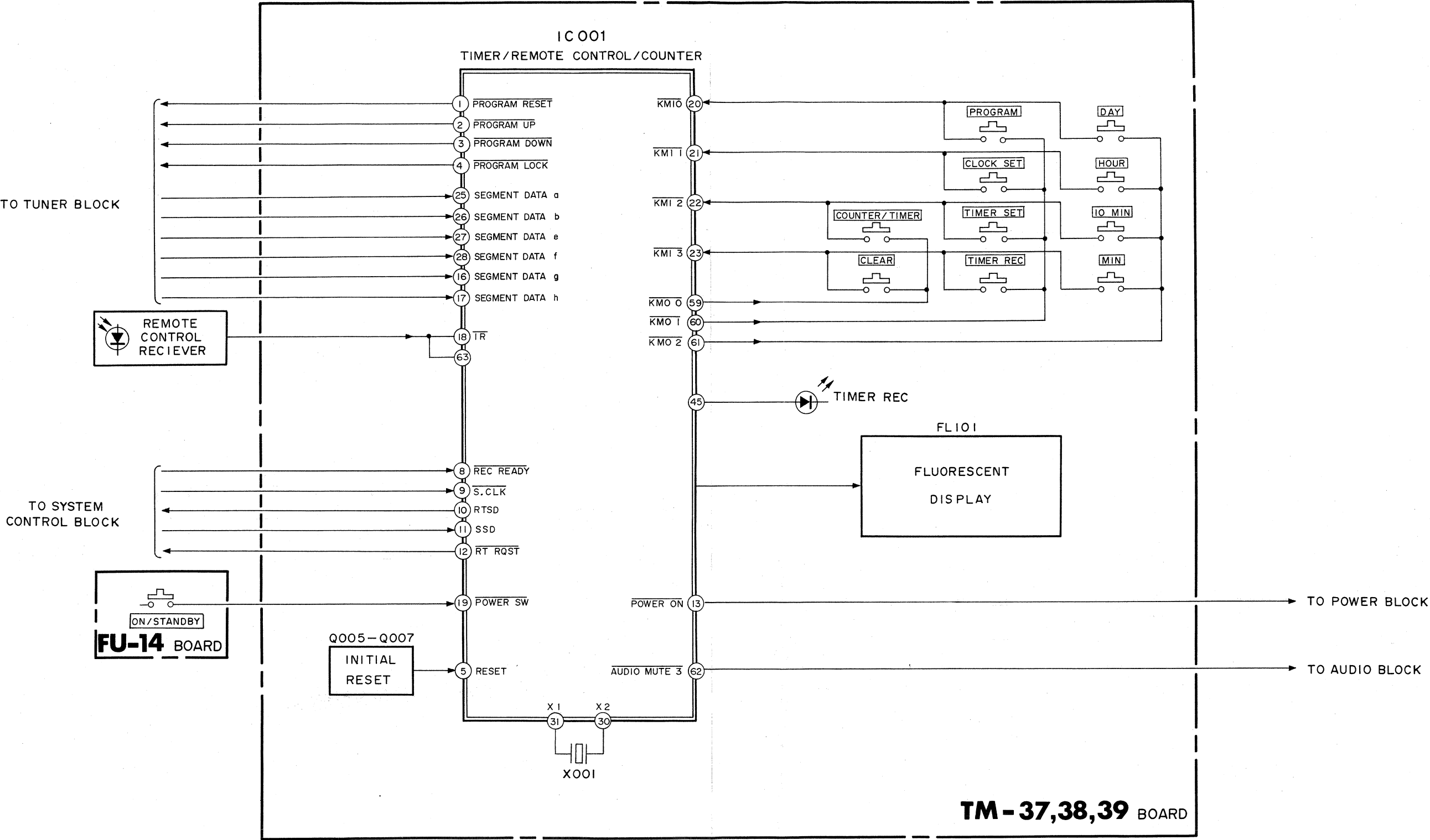
AUDIO LEVEL DIAGRAM (REC)



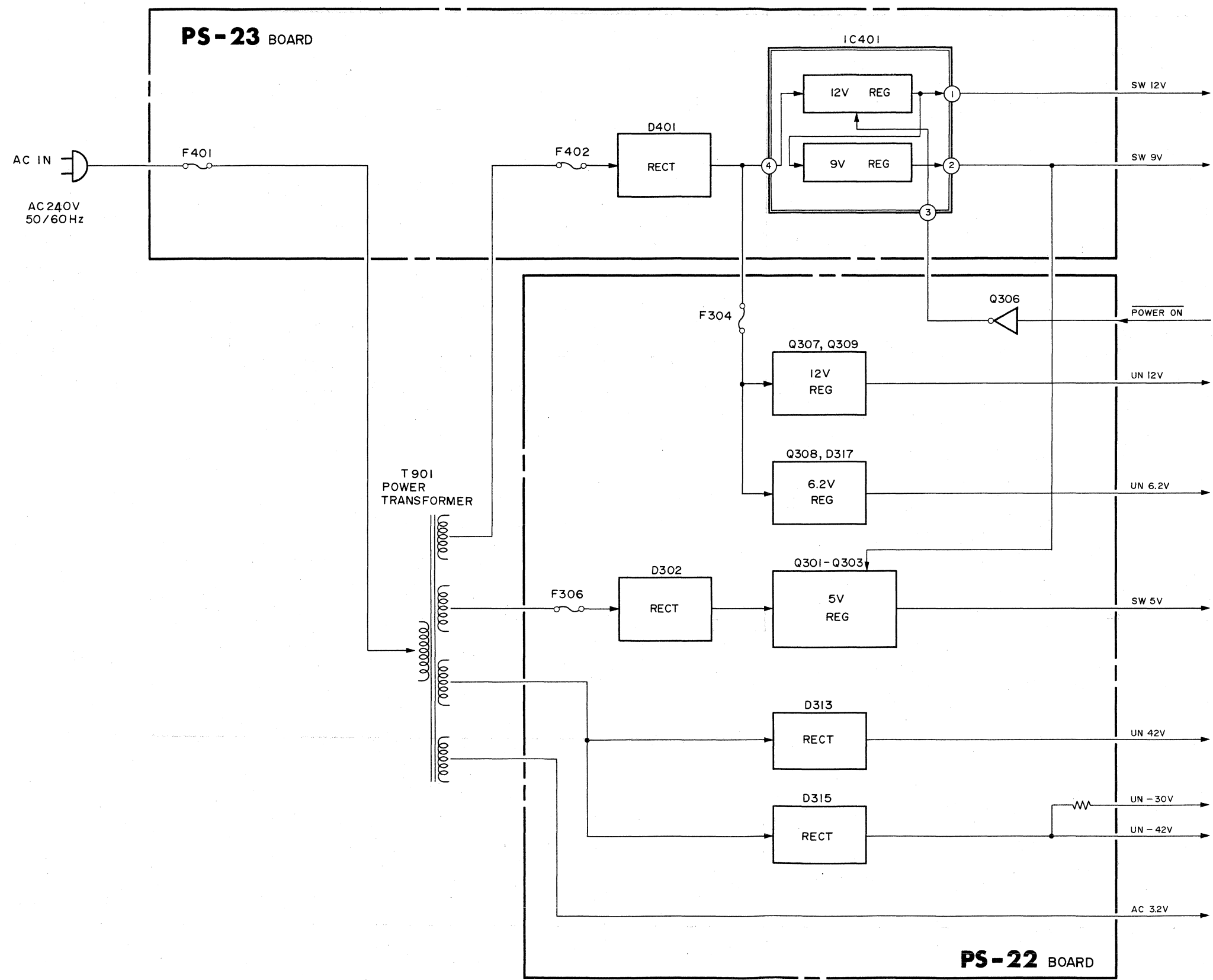
AUDIO LEVEL DIAGRAM (PB)



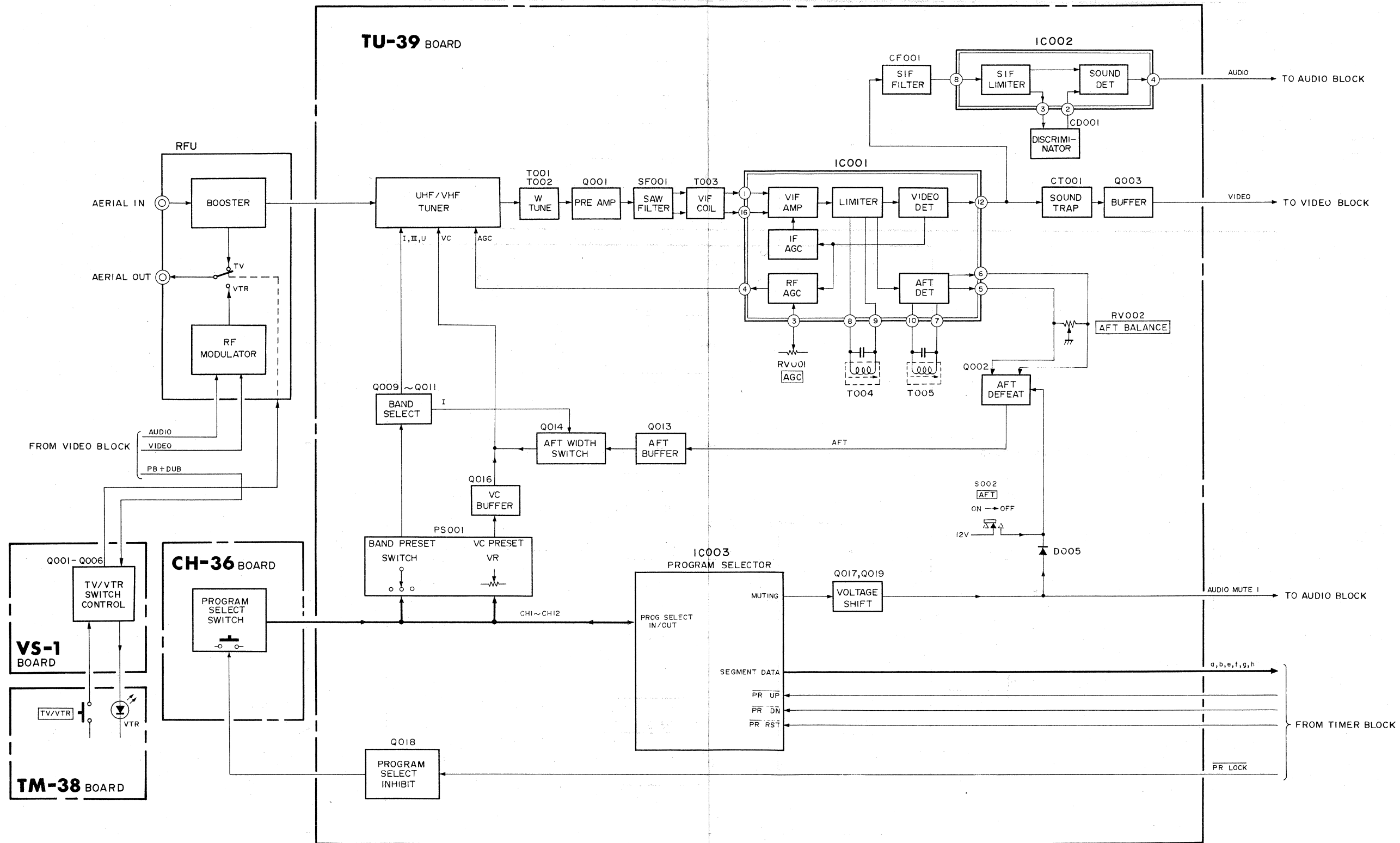
TIMER BLOCK DIAGRAM



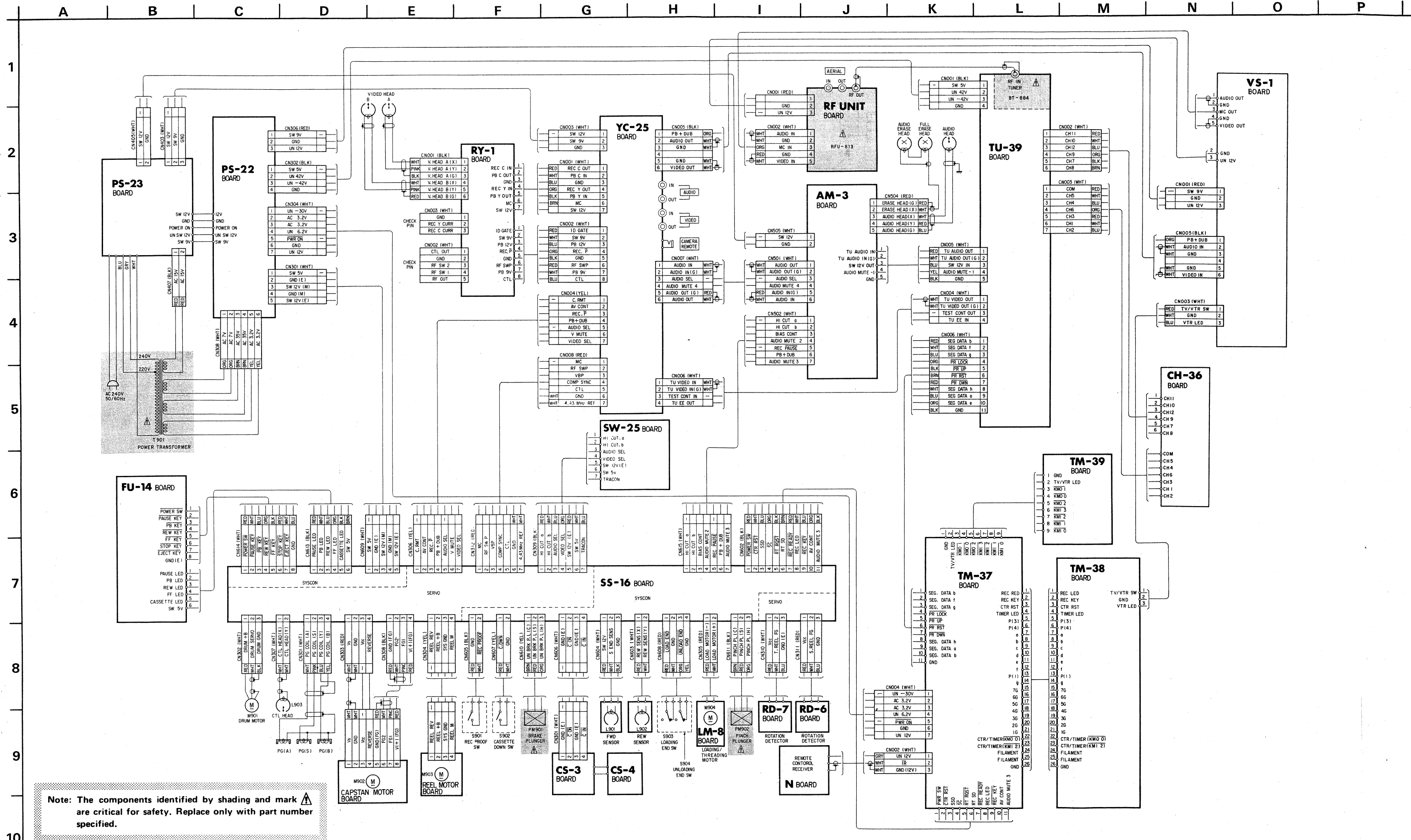
POWER SUPPLY BLOCK DIAGRAM



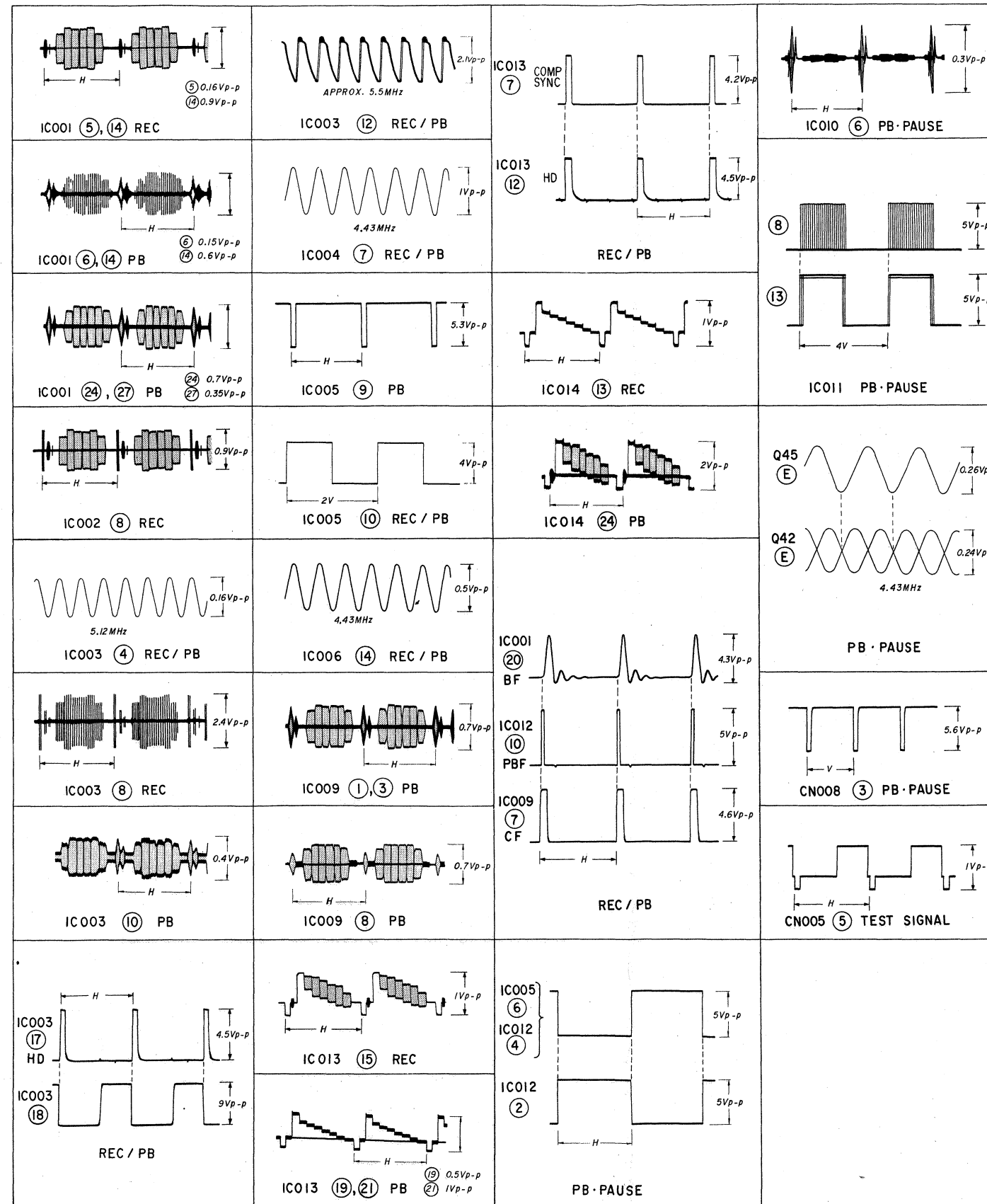
TUNER BLOCK DIAGRAM



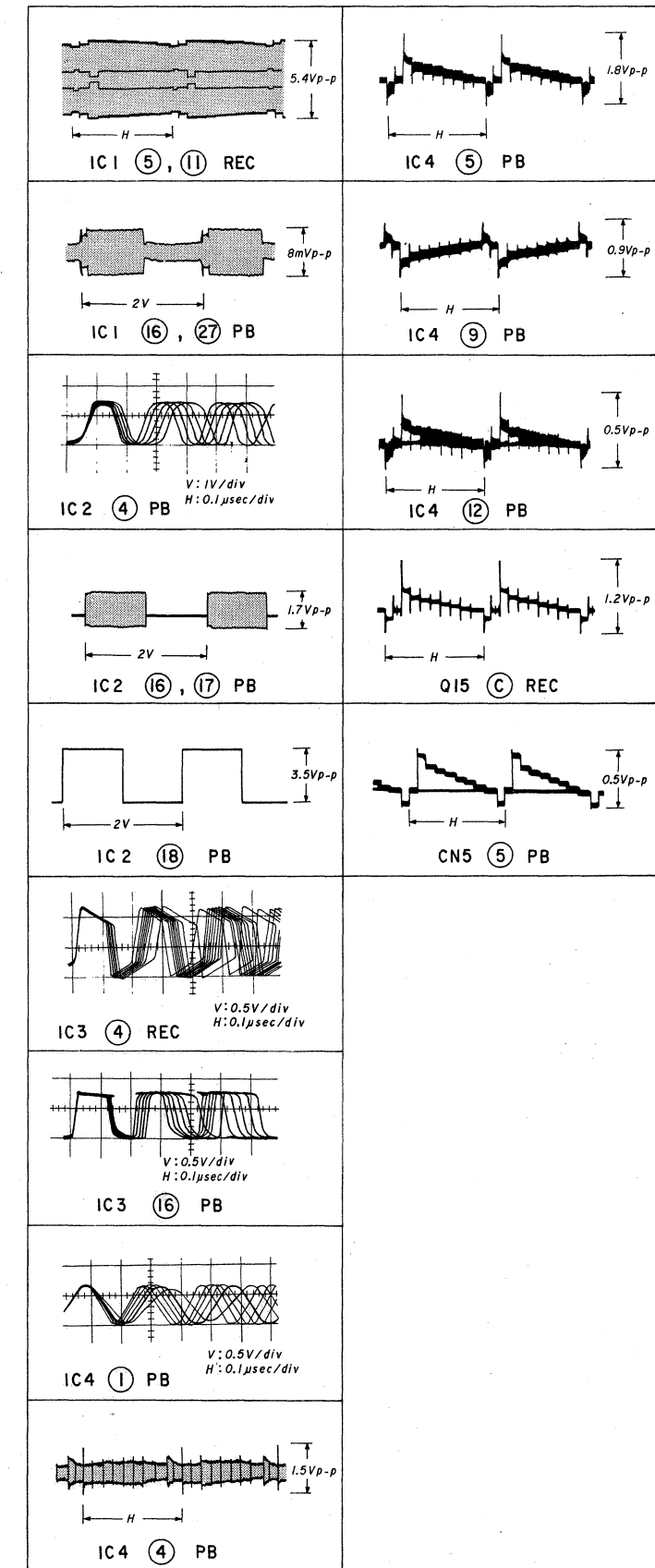
FRAME SCHEMATIC DIAGRAM



YC-25 BOARD



RY-1 BOARD



YC-25

(Y & CHROMA SIGNALS RECORD/
PLAYBACK PROCESS)

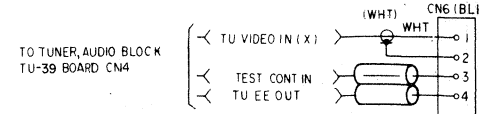
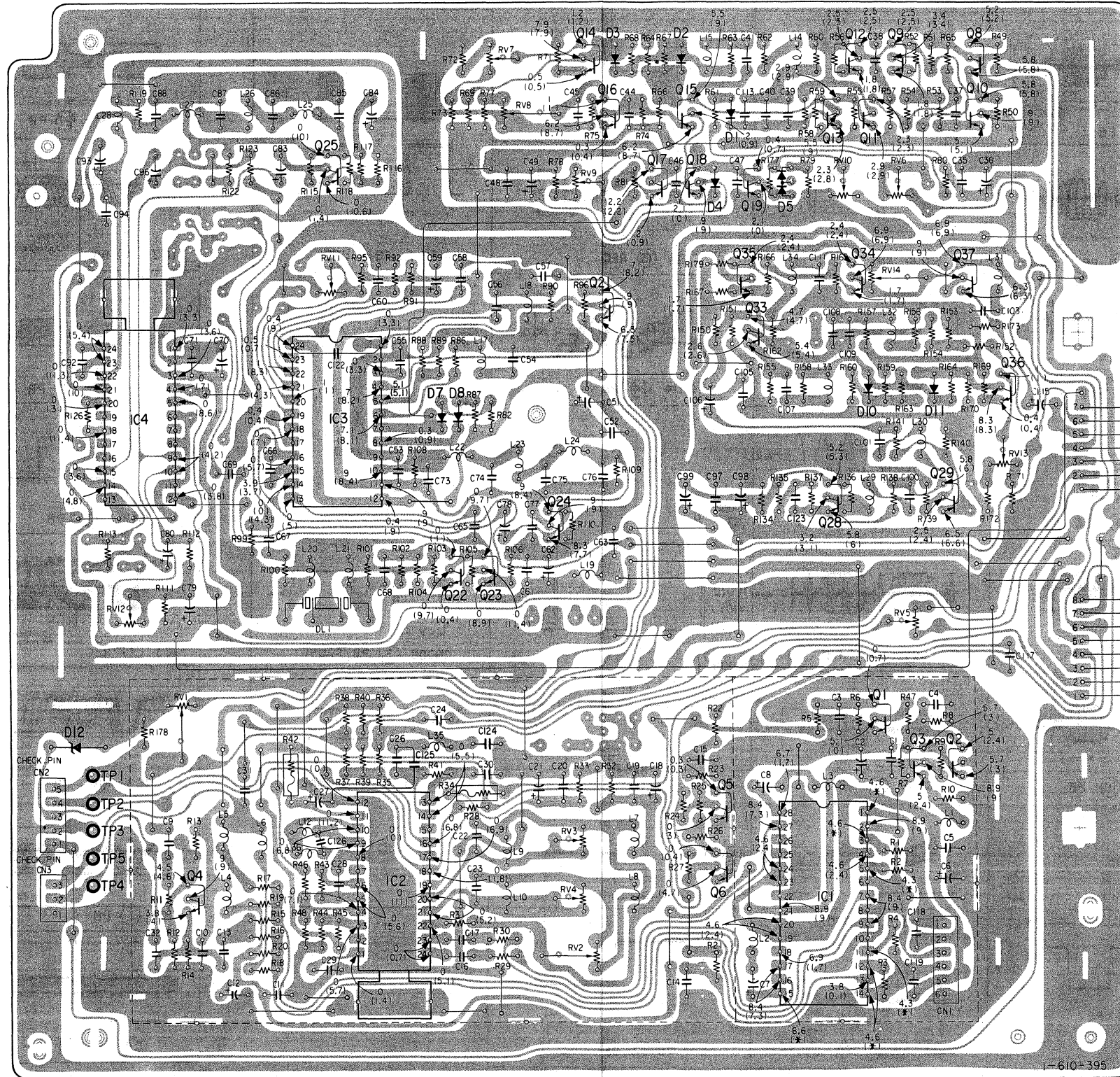
RY-1

(LOW CONVERTED CHROMA &
Y-FM SIGNALS, RECORD/PLAYBACK AMP)

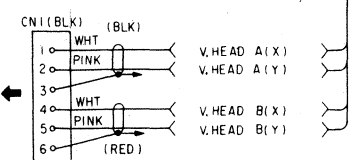
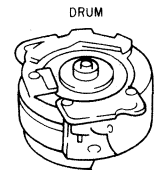
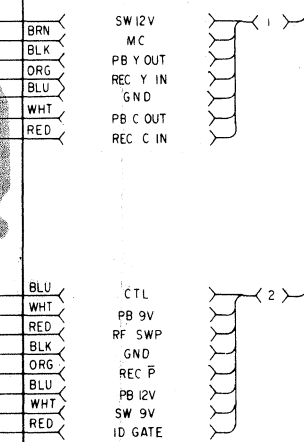
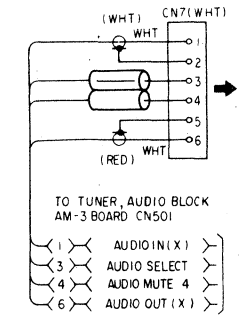
— Ref. No. YC-25 BOARD: 1000 series, RY-1 BOARD: 2000 series —

IC · Q	D	RV · TP
14 12 9 8 16 15 13 11 10	3, 2	RV7
		RV8
25 17 18 19	4, 5	RV10, RV6 RV9
35 34 37 21 33		RV11 RV14
36	7, 8 10 11	
IC4 IC3		RV13
28 29		
24		
22 23		RV12 RV5
		RV1
3, 2	12	
5		RV3
6		RV4
IC2 IC1		RV2

[RY-1 BOARD]



[YC-25 BOARD]



P

Q

R

S

T

U

V

W

X

Y

Z

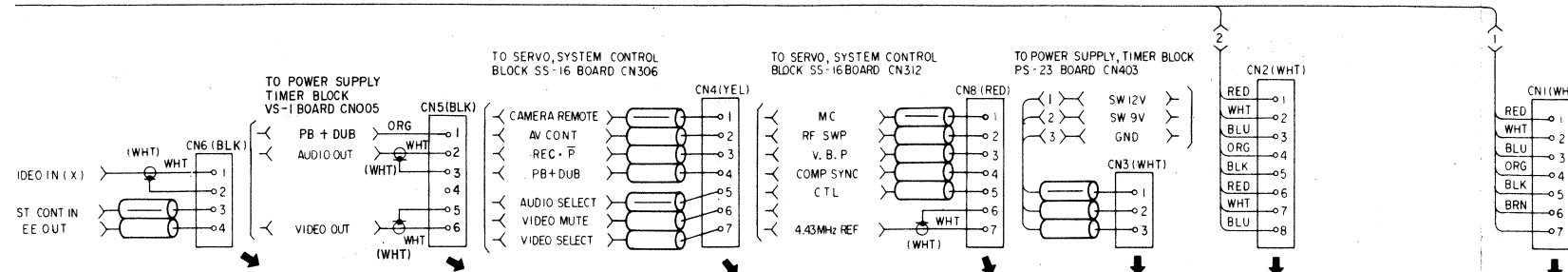
A1

B1

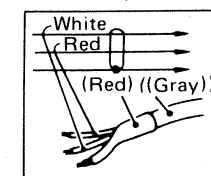
C1

D1

E1

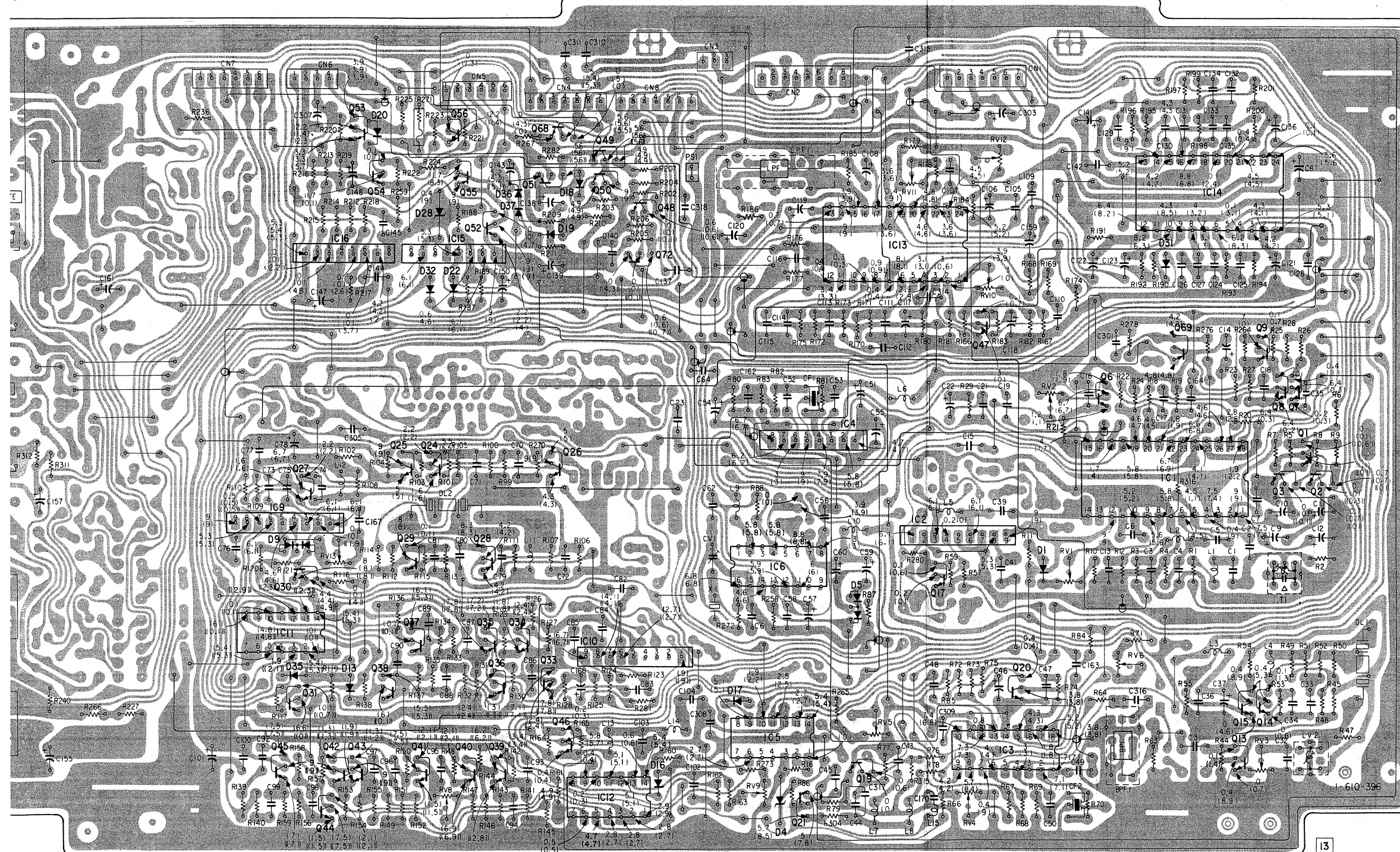


Color code of sleeving over the end of the jacket.



- indicates a lead wire mounted on the component side.
- indicates a lead wire mounted on the printed side.
- Soldering side
- B + pattern

5 BOARD 1



IC Q	D	RV
53 56	20	RV12 RV11
49	18	
54 55 51	28 36	
52 50	37	
IC16 IC15	19	
72	32 22 31	RV10
47		
69 9		
6 8 7		RV2
25 24 26 IC1	3, 2	
27		
IC9	9	CV1 RV13
29 28	1	RV1
30	5	
IC11	35 13	RV6
37 35 34		
IC10		
38		
31 36 33 20	15 14	
46	17	
IC5		RV5
IC3	13	RV3
45 42 43 41 40 39		LV2
19		
44 21	16	RV9 RV4
IC12	4	

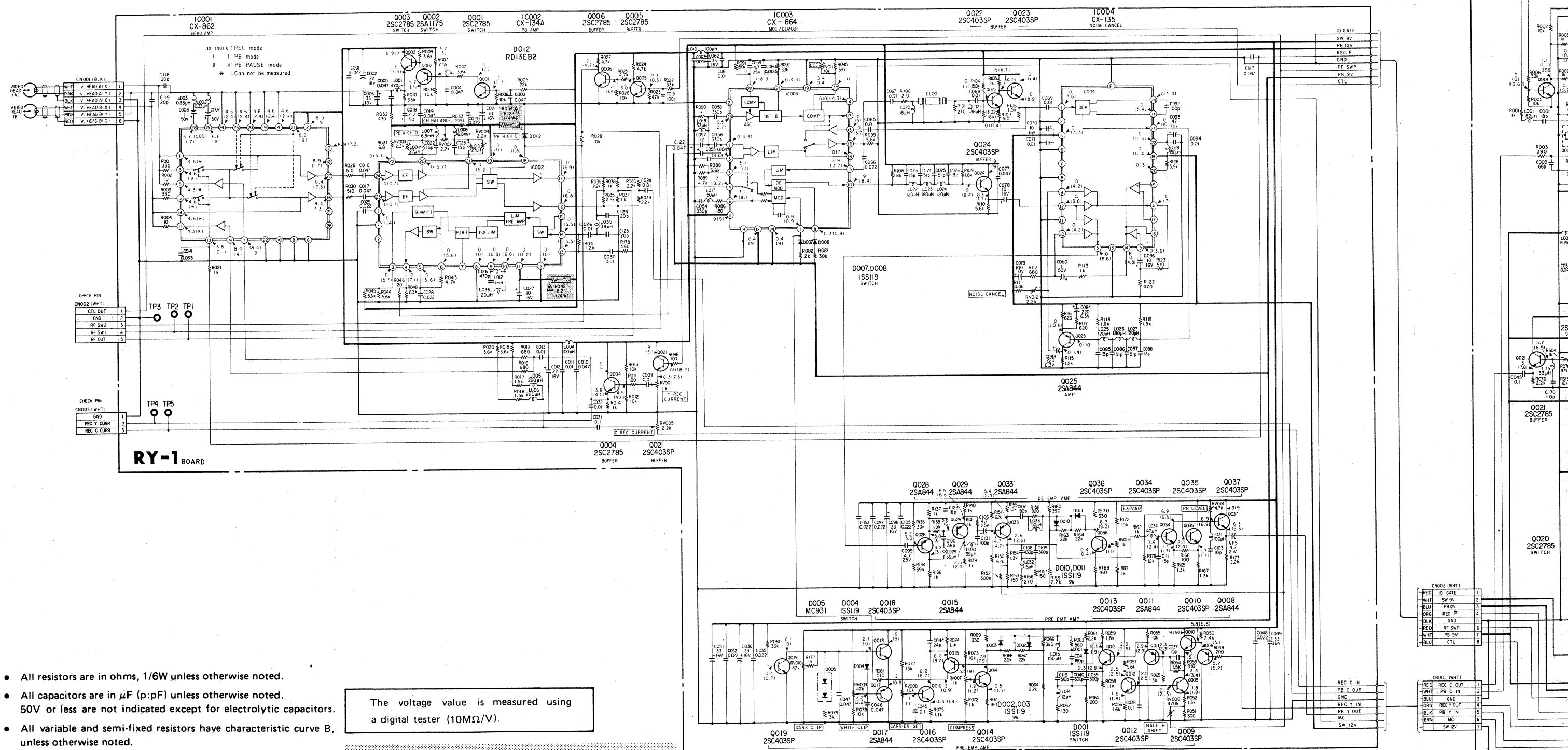
YC-25

(Y & CHROMA SIGNALS RECORD/
PLAYBACK PROCESS)

RY-1

(LOW CONVERTED CHROMA &
Y-FM SIGNALS, RECORD/PLAYBACK AMP)

— Ref. No. YC-25 BOARD: 1000 series, RY-1 BOARD: 2000 series —



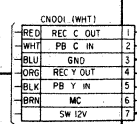
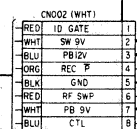
- All resistors are in ohms, 1/6W unless otherwise noted.
- All capacitors are in μF (p:pF) unless otherwise noted. 50V or less are not indicated except for electrolytic capacitors.
- All variable and semi-fixed resistors have characteristic curve B, unless otherwise noted.
- : Nonflammable resistor
- : Fusible resistor
- : Internal component
- : B+ bus.
- The voltage value is a reference value between the grounding when the color bar signal is received from a color bar generator.

The voltage value is measured using a digital tester (10M Ω /V).

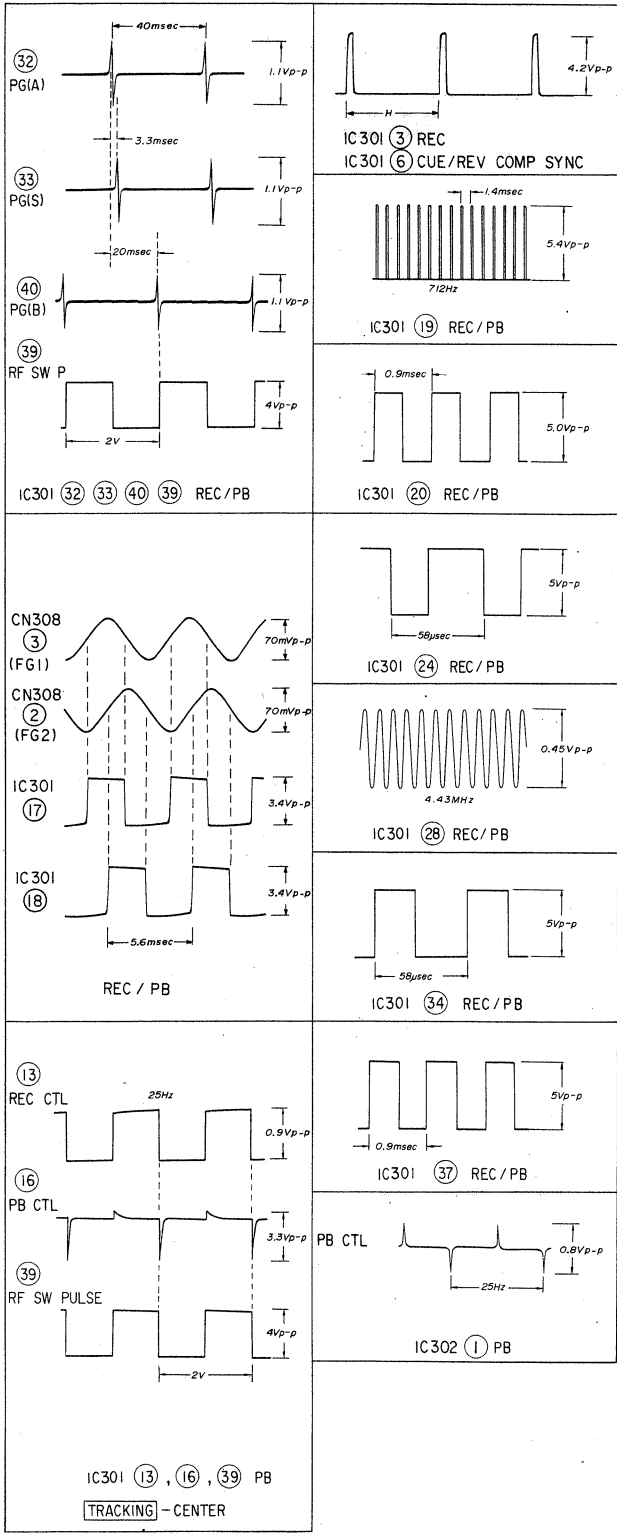
Note: The components identified by shading and mark are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

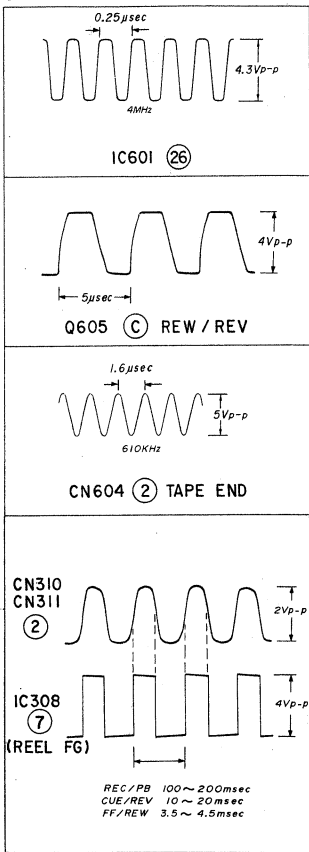
A1



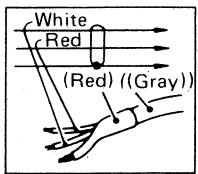
SS-16 (SERVO) BOARD



SS-16 (SYSTEM CONTROL) BOARD



Color code of sleeving over the end of the jacket.



- indicates a lead wire mounted on the component side.
- indicates a lead wire mounted on the printed side.
- Soldering side
- Component side
- B + pattern

SS-16

(SERVO/SYSTEM CONTROL)

FU-14

(FUNCTION SWITCH)

SW-25

(TONE INPUT SELECT SWITCH TRACKING)

RD-6

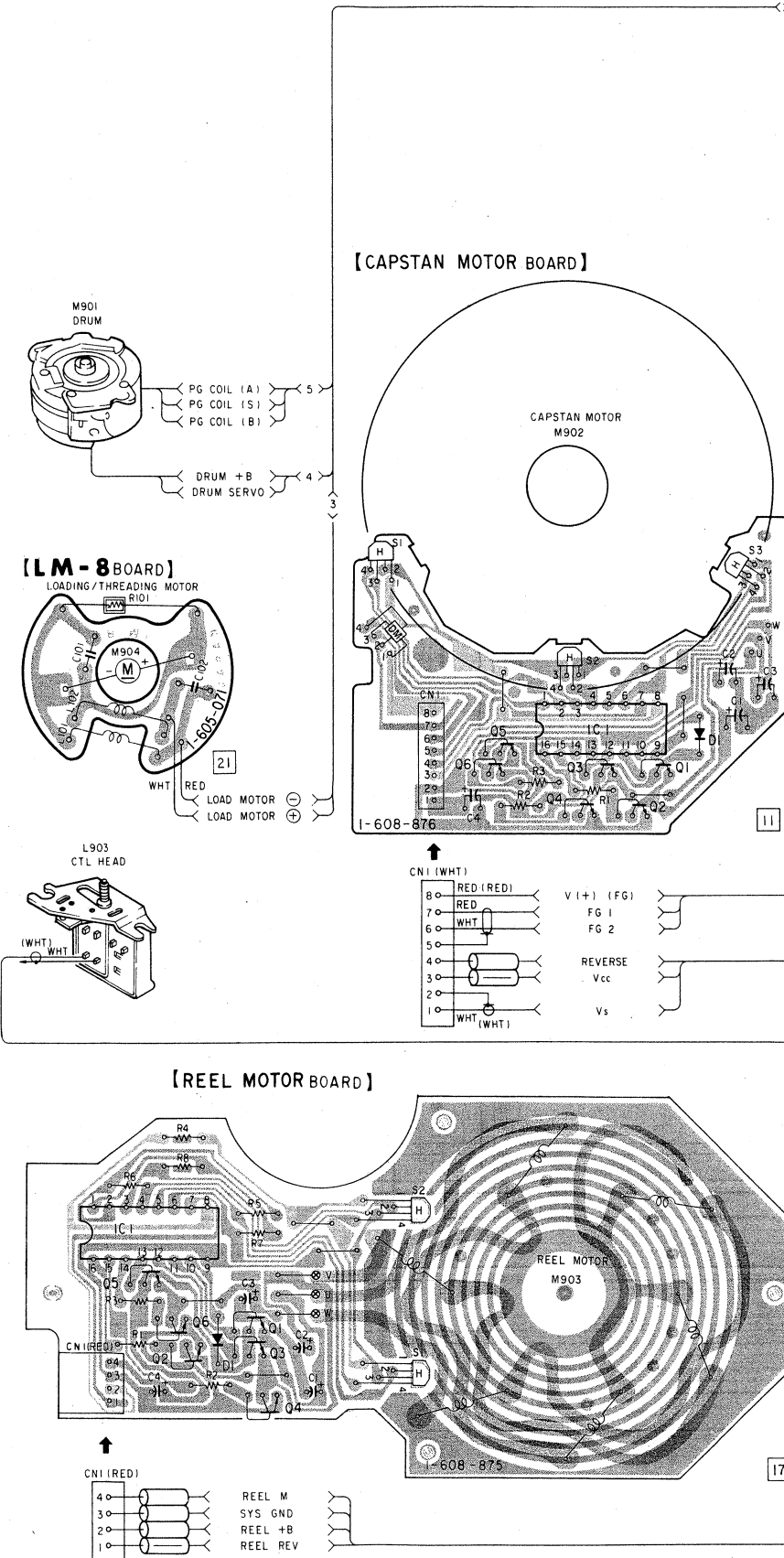
(ROTATION DETECTOR)

RD-7

(ROTATION DETECTOR)

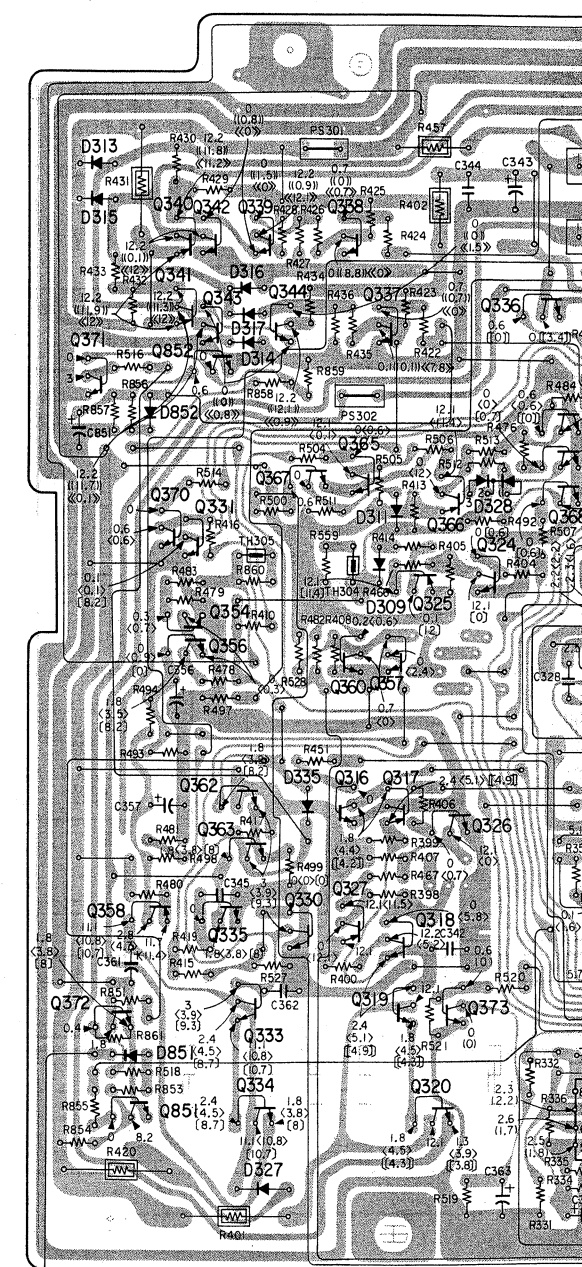
Ref. No. SS-16 BOARD: 3000 series, FU-14 BOARD: 4700 series, SW-25 BOARD: 4600 series, RD-6, RD-7 BOARD: 9200 series, LM-8 BOARD: 9100 series, CAPSTANMOTOR BOARD: 5100 series, REELMO

1
2
3
4
5
6
7
8
9
10



Q · IC	D	TP · RV
339	349,346	
340,342,338	314	
313	613	
341,344,337	316	
343 336	317	RV302
312	301	
311, IC308	314	612,610
371 852	310	
355 309	332	406
359	615	404
370,367,365	301	403
366	620,618	RV309, RV304
368	608 606	RV301
370	607,617	
331	609,612	
324	311	616
325	309	405
354	610,619	RV303
356	330	410
360	329	409
	304	
IC305	335	RV308, RV307
362,316,317		605
326		407,601
363		
327	315	
IC307 IC306	IC601	
358,335,330,318	322	
	627	
333 319 373		339,340
372	851	
		306
334		341
851, 320 IC302		
306,305		
626		
624,623,631,630,629,628		
304,622,621,625,633,634,632		
	327	325

[SS-16 BOARD]



5 (TONE INPUT SELECT SWITCH TRACKING)

RD-6 (ROTATION DETECTOR)

RD-7 (ROTATION DETECTOR)

LM-8 (NOISE FILTER)

CAPSTAN MOTOR (CAPSTAN MOTOR)

REEL MOTOR (REEL MOTOR)

CS-3 (CASSETTE ON SWITCH)

CS-4 (CA SW)

F

G

H

I

J

K

L

M

N

O

P

Q

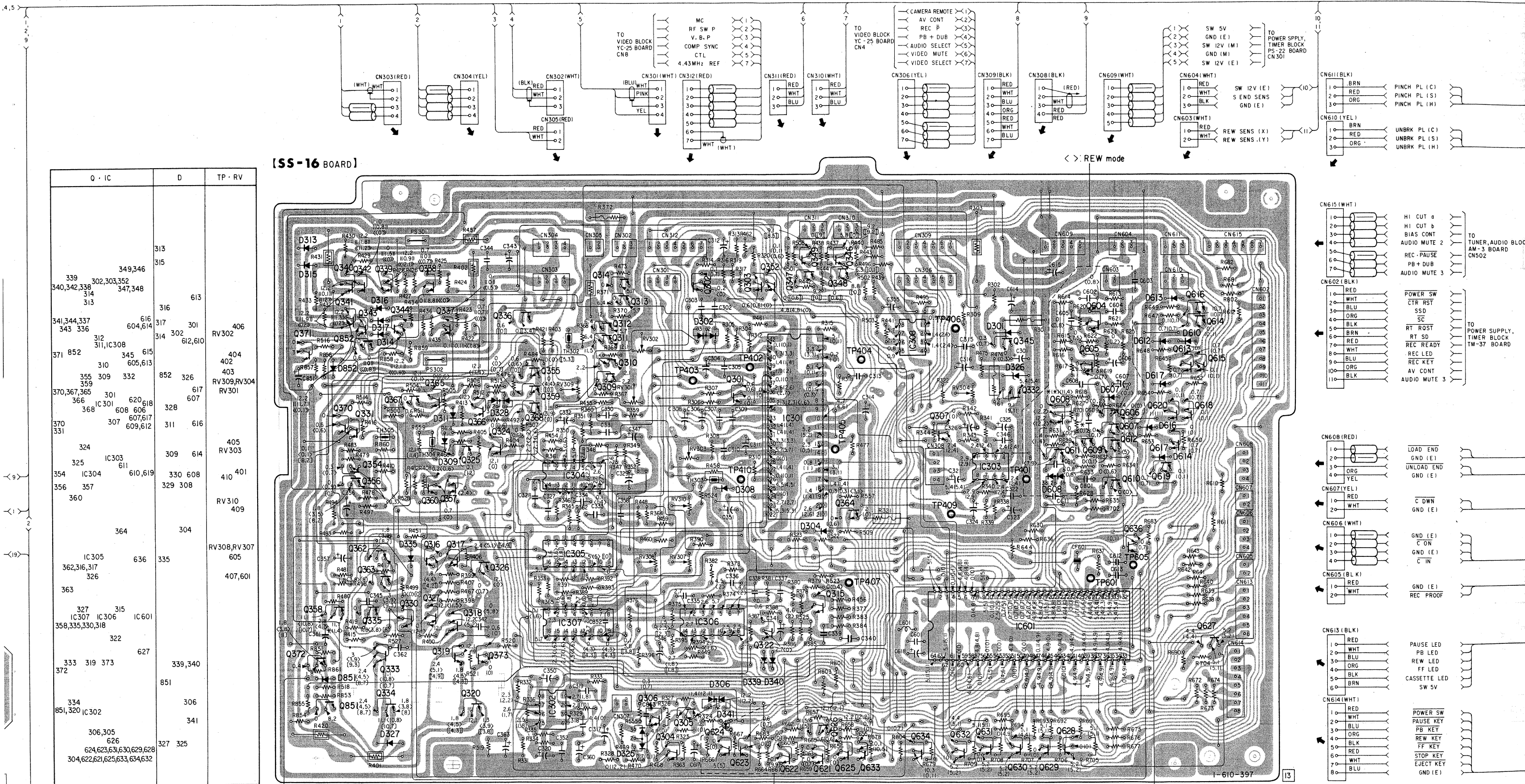
R

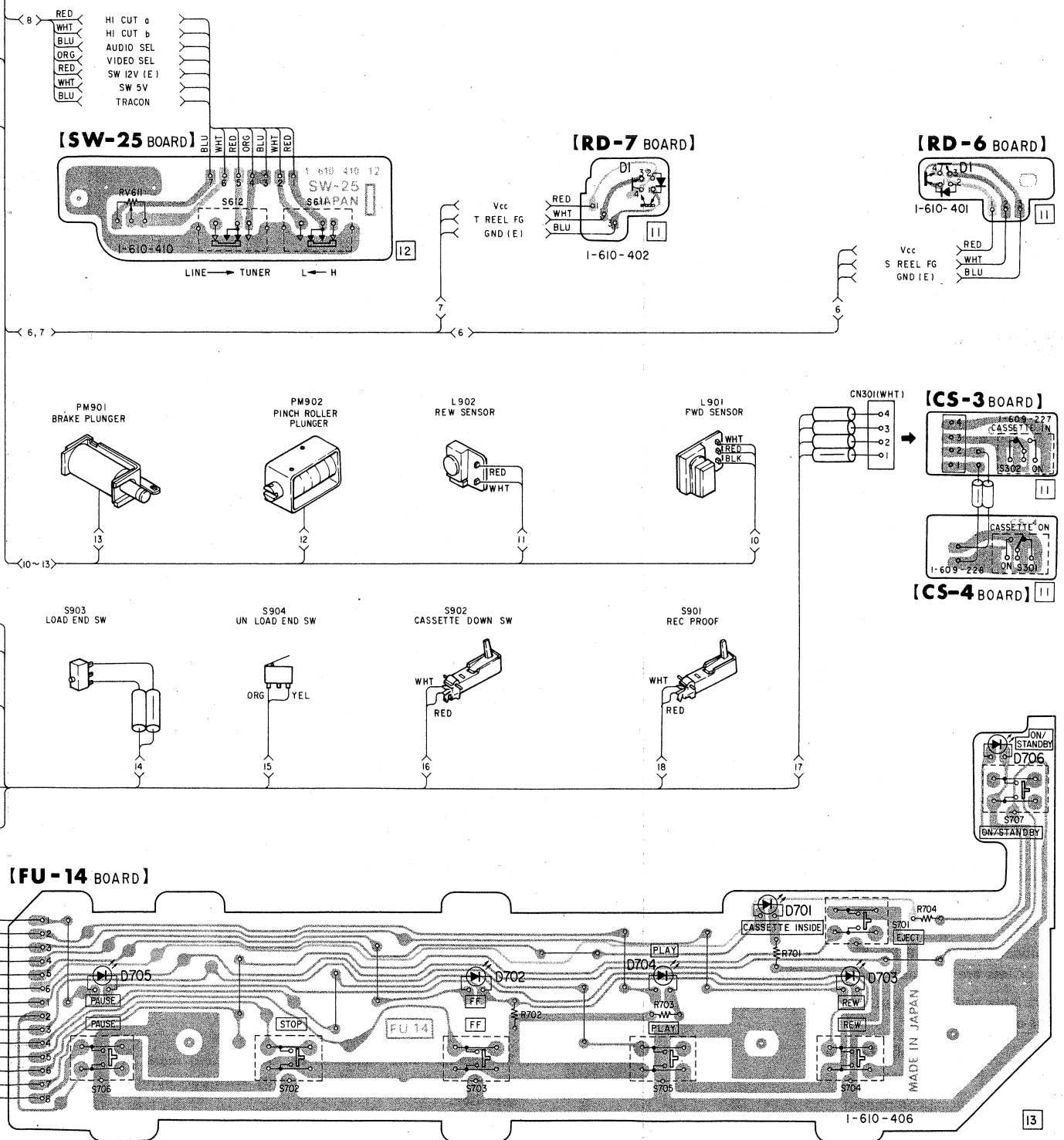
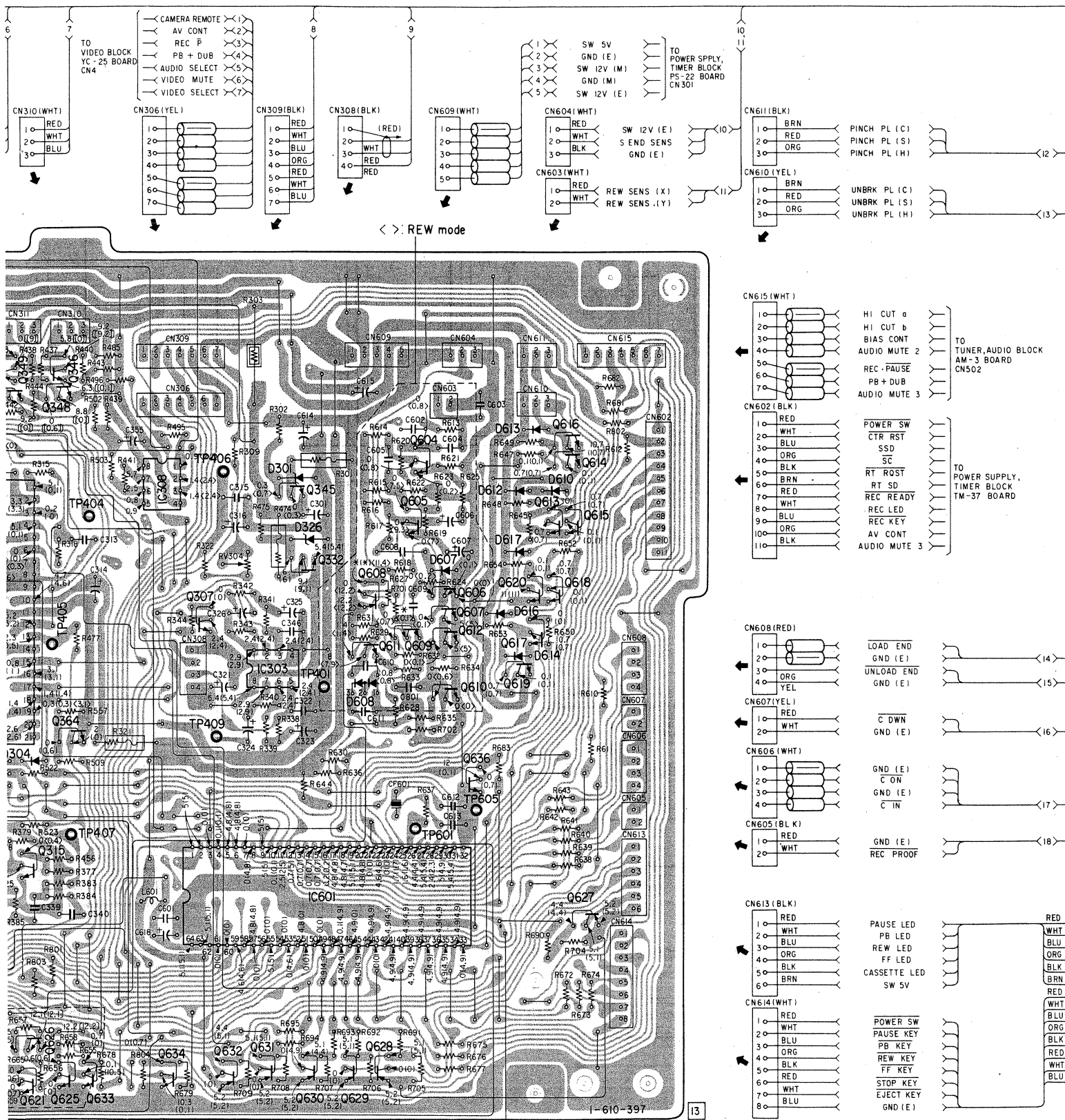
S

T

U

ies, RD-6, RD-7 BOARD: 9200 series, LM-8 BOARD: 9100 series, CAPSTANMOTOR BOARD: 5100 series, REELMOTOR BOARD: 5000 series, CS-3, CS-4 BOARD: 9300 series —





SS-16

(SERVO/SYSTEM
CONTROL)

FU-14

(FUNCTION SWITCH)

SW-25

(TONE INPUT SELECT
SWITCH TRACKING)

RD-6

(ROTATION DETECTOR)

RD-7

(ROTATION DETECTOR)

LM-8

(NOISE FILTER)

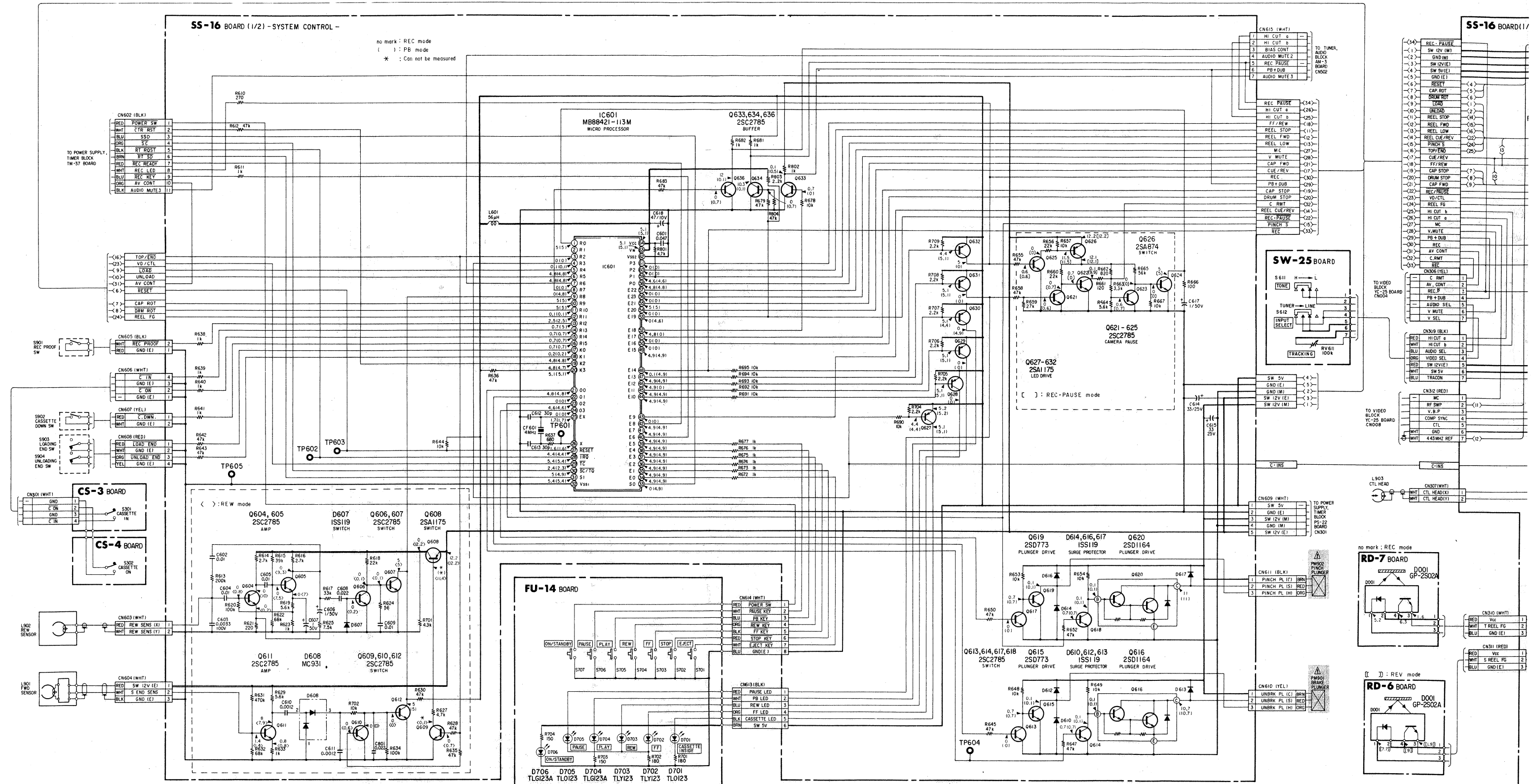
CAPSTAN MOTOR

(CAPSTAN MOTOR)

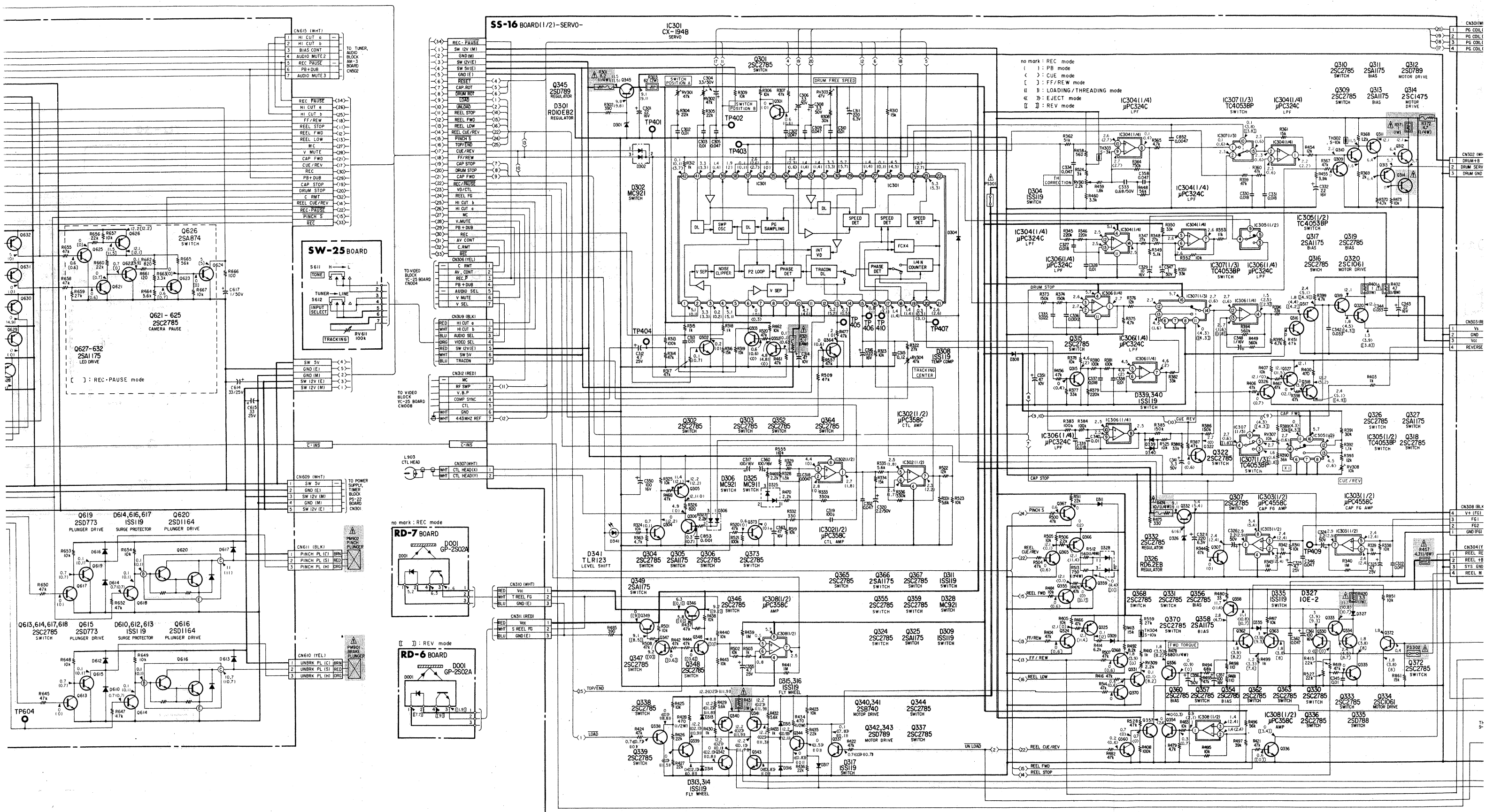
RE

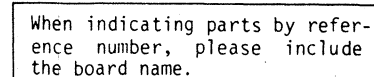
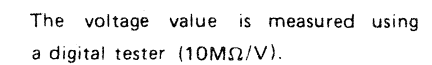
— Ref. No. SS-16 BOARD: 3000 series, FU-14 BOARD: 4700 series, SW-25 BOARD: 4600 series, RD-6, RD-7 BOARD: 9200 series, LM-8 BOARD: 9100 series, CAPSTANMOTOR BOARD: 5100 series, REELMOTOR BOARD: 5000 series, CS-3, CS-4 BOARD: 9300 series —

SS-16 BOARD (1/2) - SYSTEM CONTROL -

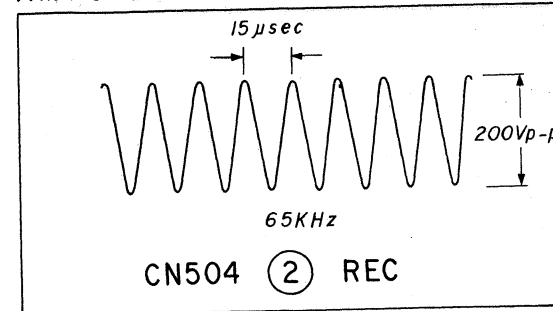
no mark : REC mode
() : PB mode
* : Can not be measured

REELMOTOR BOARD: 5000 series, CS-3, CS-4 BOARD: 9300 series —

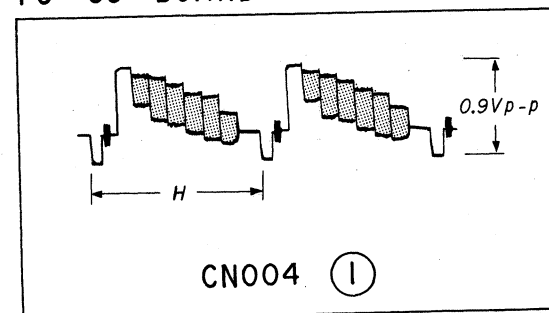




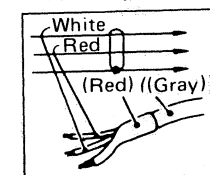
AM-3 BOARD



TU-39 BOARD



- Color code of sleeving over the end of the jacket.



- indicates a lead wire mounted on the component side.
- indicates a lead wire mounted on the printed side.
-  Soldering side
-  B + pattern
-  B - pattern

TU-39

(VIF, SIF, AFC,
CHANNEL PRESET)

AM-3

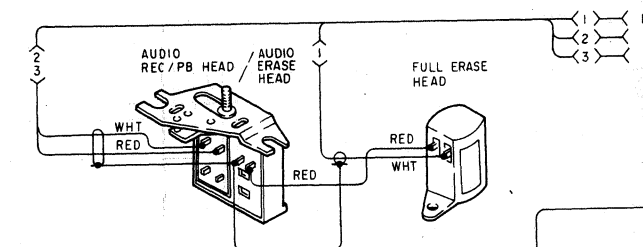
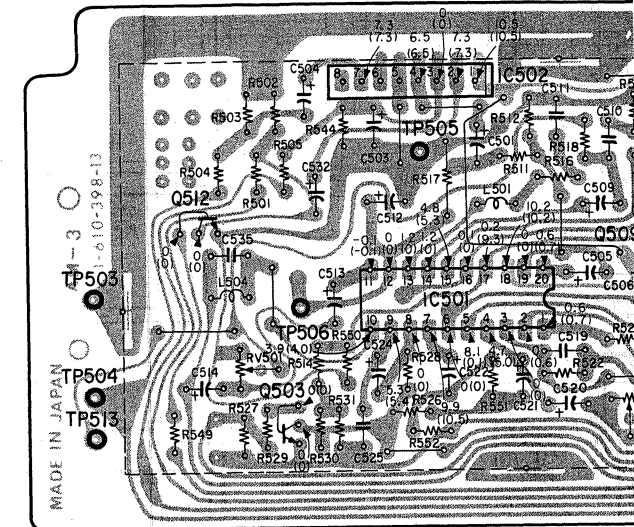
(AUDIO RECORD/
PLAY BACK PROCESS)

CH-36

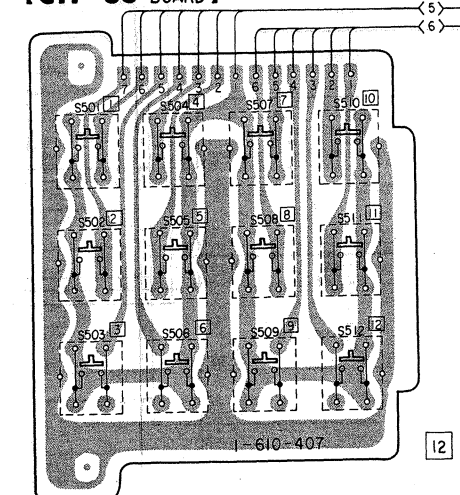
— Ref. No. TU-39 BOARD: 4000 series, AM-3 BOARD: 5500 series, CH-36 BOARD: 8500 series —

IC	512	IC502
Q	503	IC501
D		
TP	503	505
RV	504 513	RV501 506 RV50

【AM-3 BOARD】

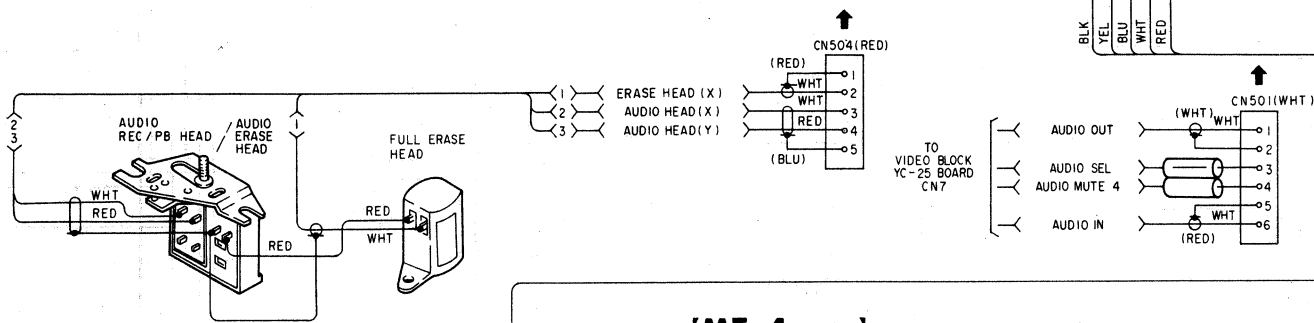
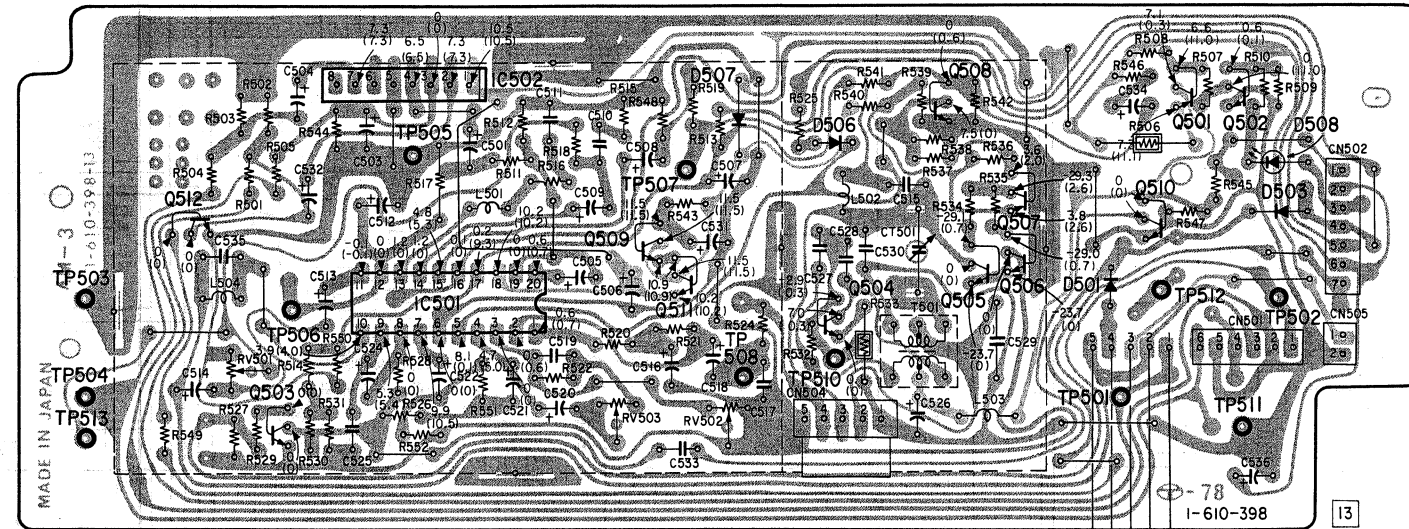


【CH-36 BOARD】

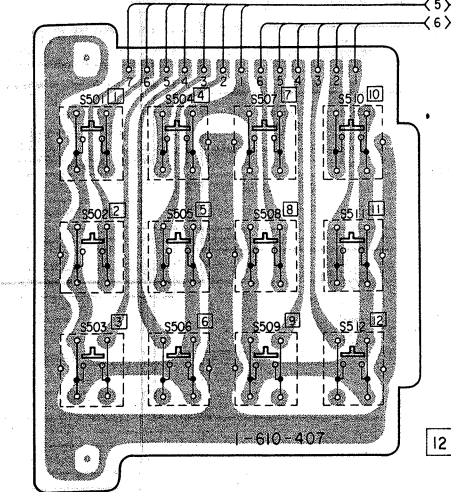


U-39		(VIF, SIF, AFC, CHANNEL PRESET)		AM-3		(AUDIO RECORD/ PLAY BACK PROCESS)		CH-36		(CHANNEL SWITCH)		MT-4		(INTERMEDIATION)			
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	
Ref. No. TU-39 BOARD: 4000 series, AM-3 BOARD: 5500 series, CH-36 BOARD: 8500 series —																	
IC	IC502																
Q	512	IC501		509 511	504	507 505, 506	510	501	502								
D	503					506	507			508 503							
TP	503	505		507		CT501		512	502								
RV	504 513	RV501	506	RV503	RV502	508	510	501	511								

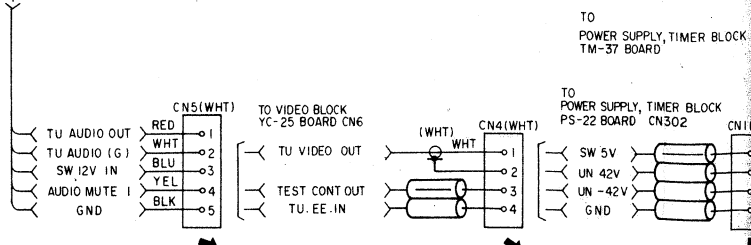
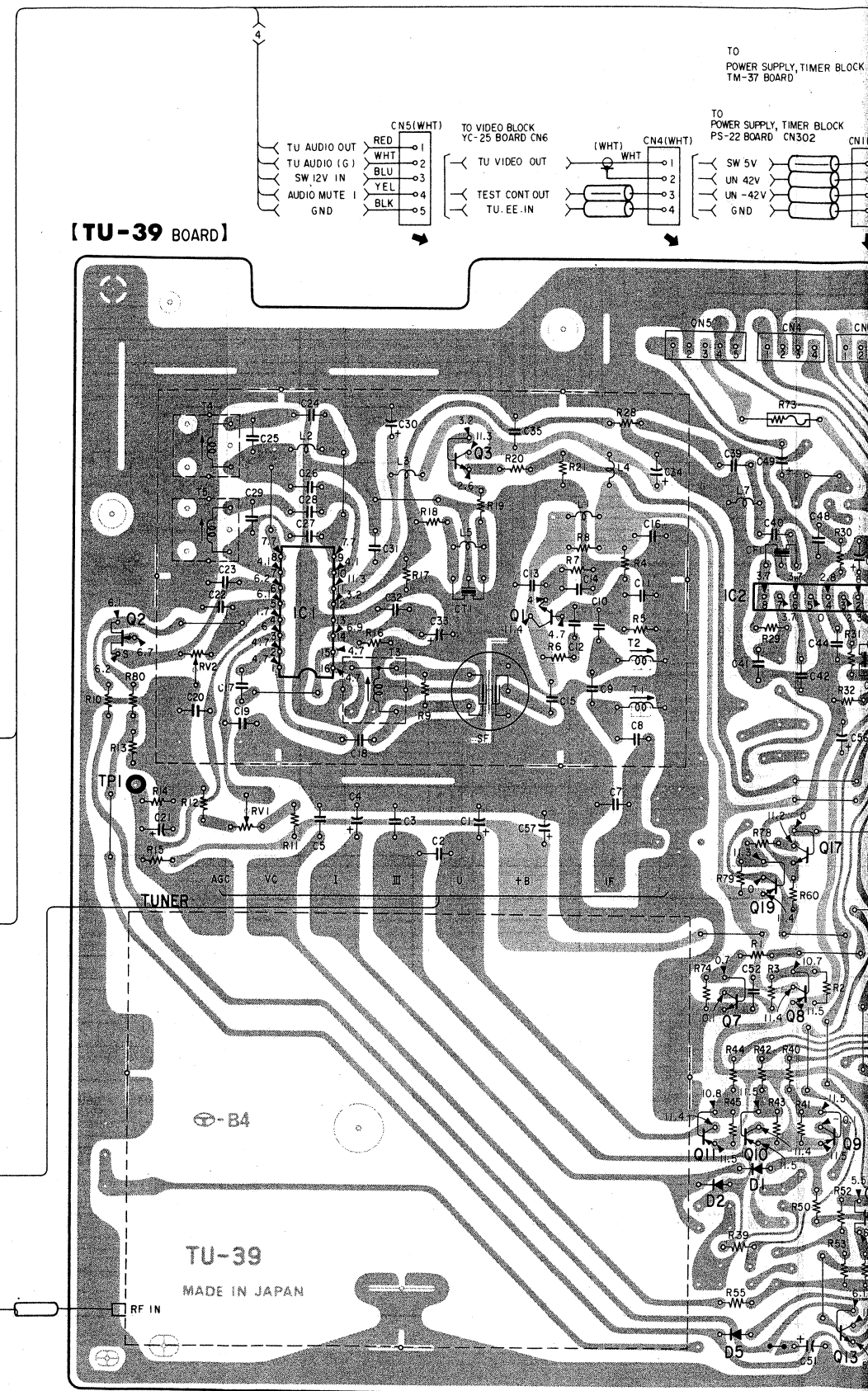
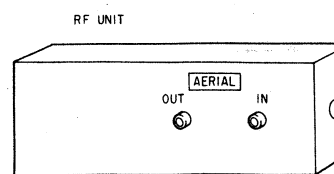
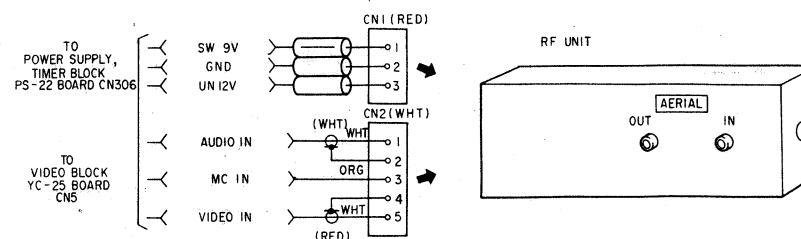
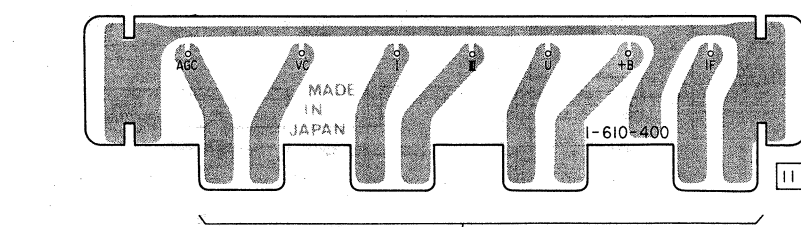
[AM-3 BOARD]



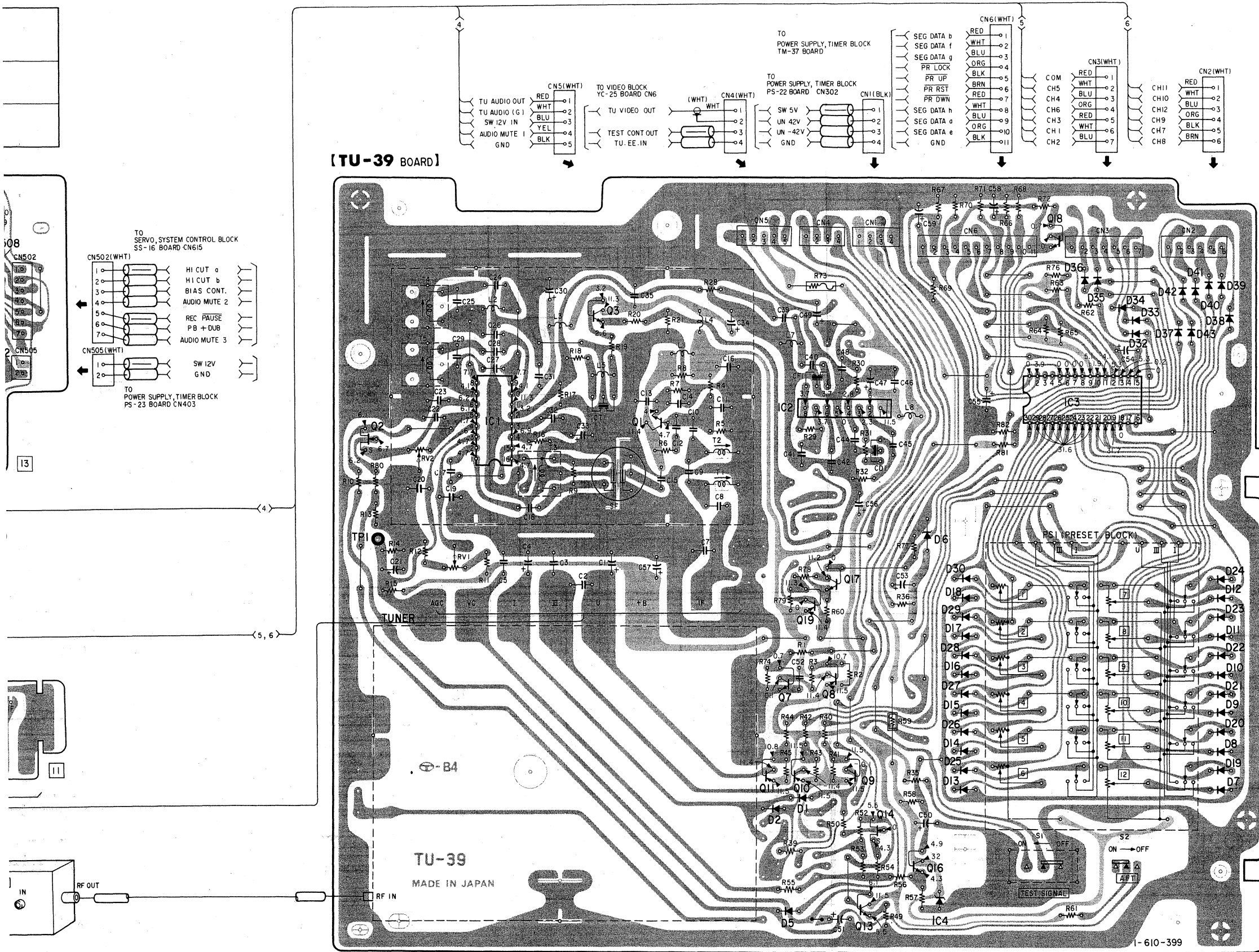
[CH-36 BOARD]



[MT-4 BOARD]



J K L M N O P Q R S T U V W X



IC - Q	D	TP - RV
18		
3	36,35 42,41 34 33 32,37,43,38	
1		
2		
IC1		
IC2		
IC3		
		RV2
	6	
		RV1
17	30 24	
19	18 12	
	29 23	
	17 11	
7,8	28 22	
	16 10	
	27 21	
	15 9	
	26 20	
	14 8	
11,10,9	25 19	
	10,13 7	
	1	
14		
16		
13		
IC4		
	5	

TUNER, AUDIO TUNER, AUDIO

TU-39

(VIF, SIF, AFC,
CHANNEL PRESET)

AM-3

(AUDIO RECORD/
PLAY BACK PROCESS)

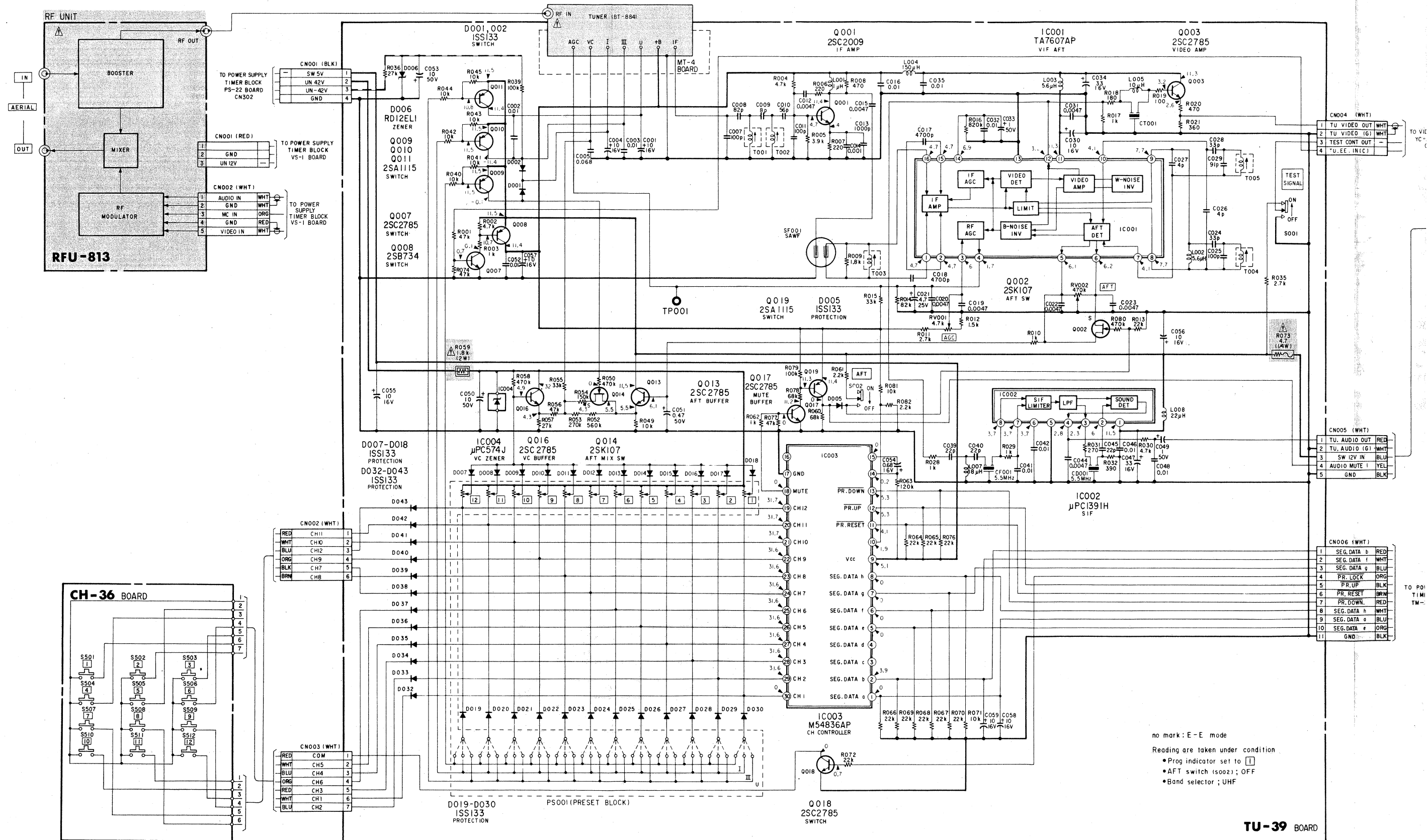
CH-36

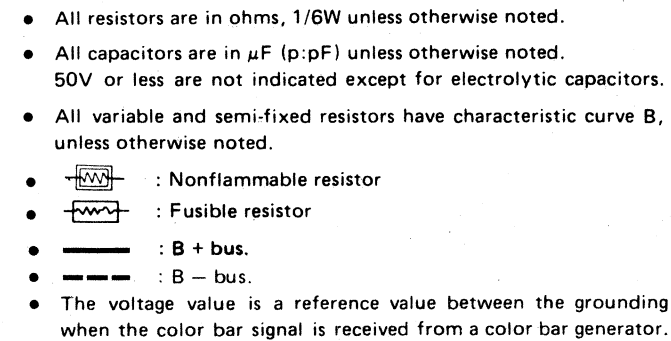
(CHANNEL SWITCH)

MT-4

(INTERMEDIATION)

— Ref. No. TU-39 BOARD: 4000 series, AM-3 BOARD: 5500 series, CH-36 BOARD: 8500 series —

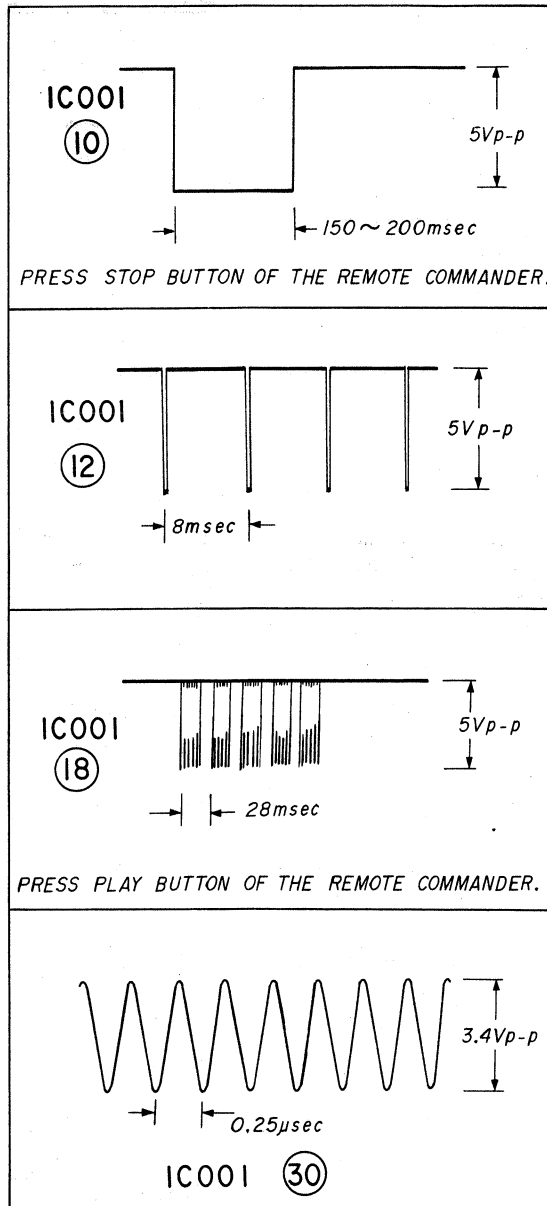




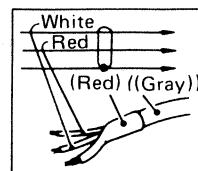
Note: The components identified by shading and mark  are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

TM - 37 BOARD



- Color code of sleeving over the end of the jacket.



- indicates a lead wire mounted on the component side.
- indicates a lead wire mounted on the printed side.
-  Soldering side
-  B + pattern
-  B - pattern

PS-22

(POWER SUPPLY
REGULATOR)

PS-23

(POWER SUPPLY
REGULATOR)

TM-37

(TIMER CONTROL)

TM-38

(TIMER INDICATOR REC RESET
TIMER COUNTER SWITCH)

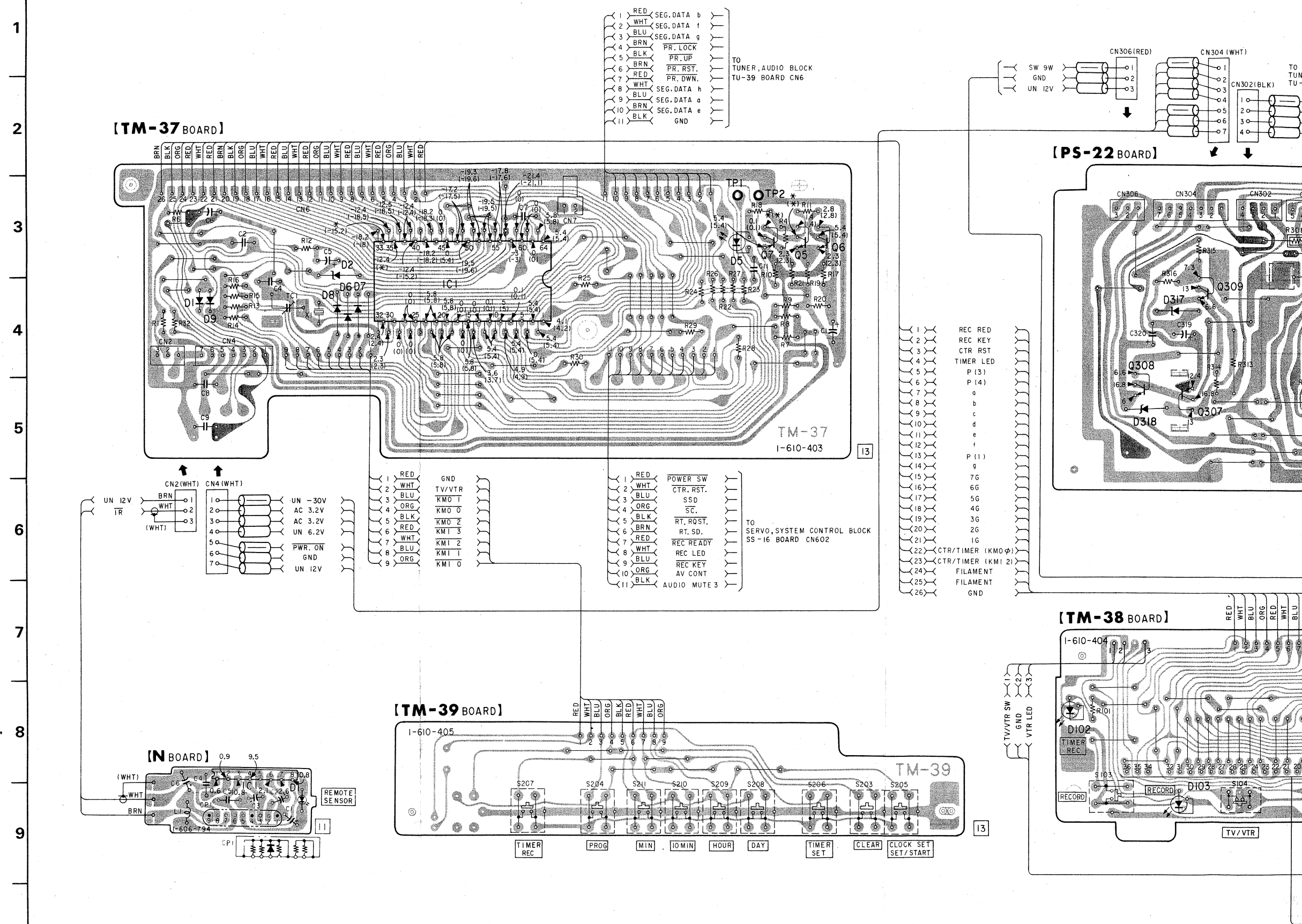
TM-39

(TIMER PRESET SWITCH)

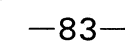
VS-1

(INTERMEDIATION)

— Ref. No. PS-22 BOARD: 6300 series, PS-23 BOARD: 6400 series, TM-37 BOARD: 7000 series, TM-38 BOARD: 7100 series, TM-39 BOARD: 7200 series, VS-1 BOARD: 8000 series, N BOARD: 9600 series —



D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	--

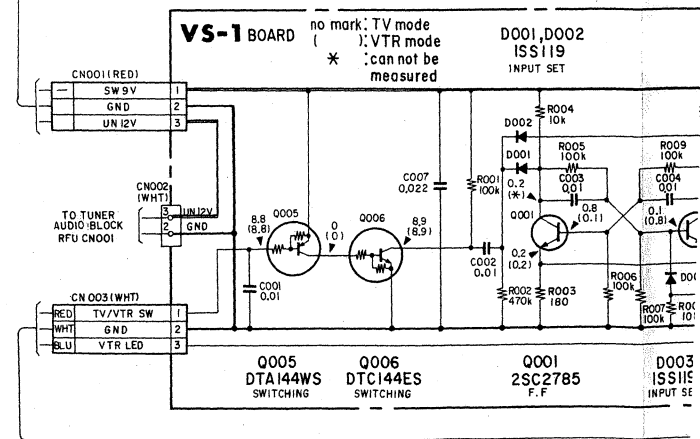
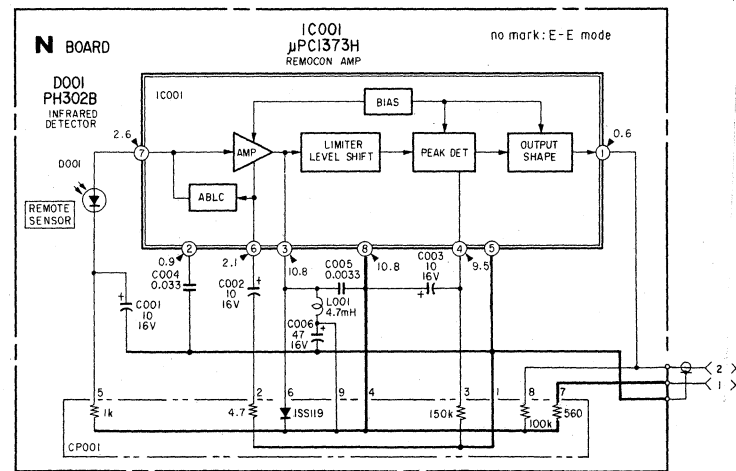
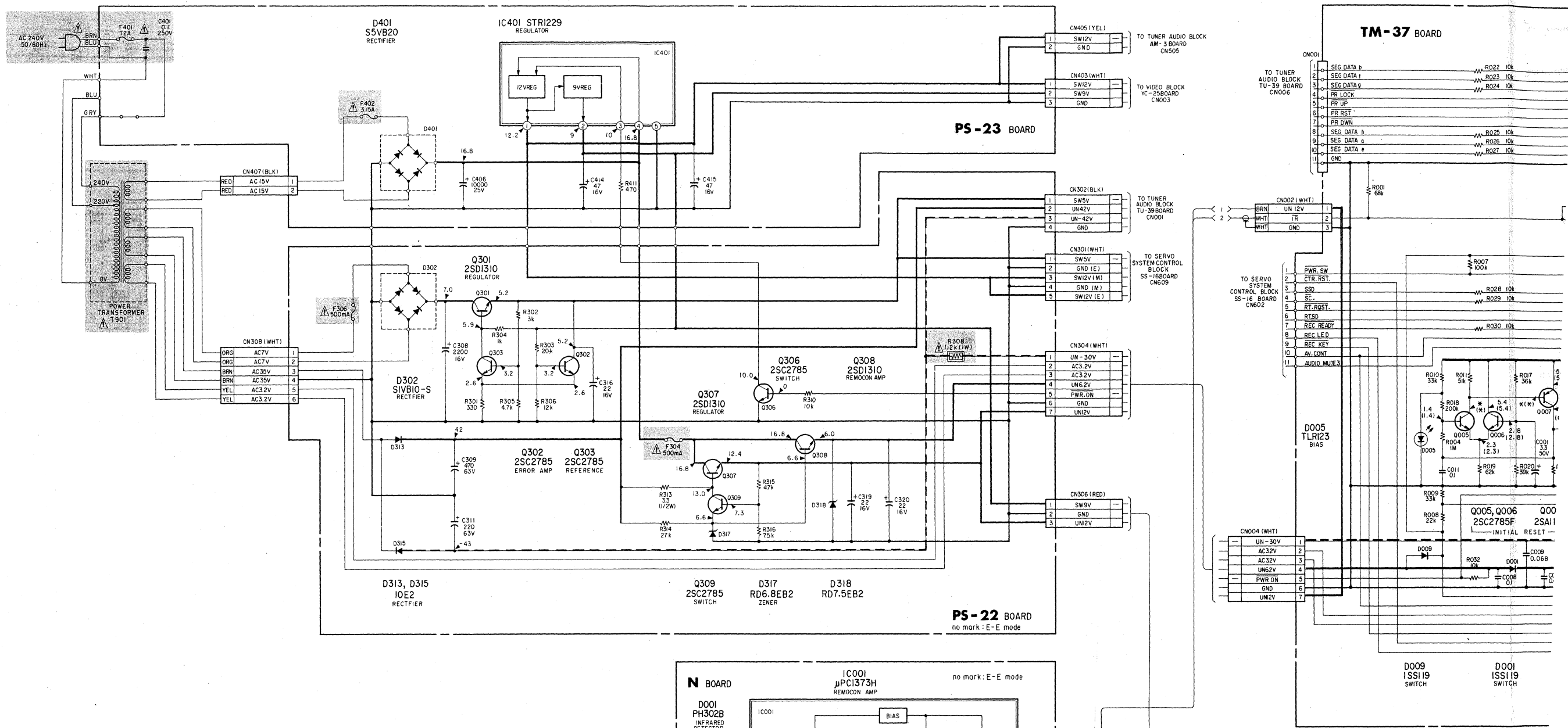


POWER SUPPLY, TIMER

N (REMOTE CONTROL
SIGNAL SENSOR)

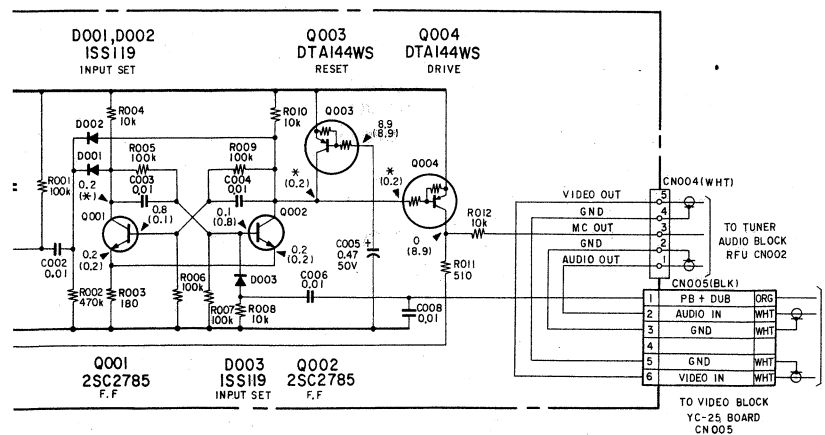
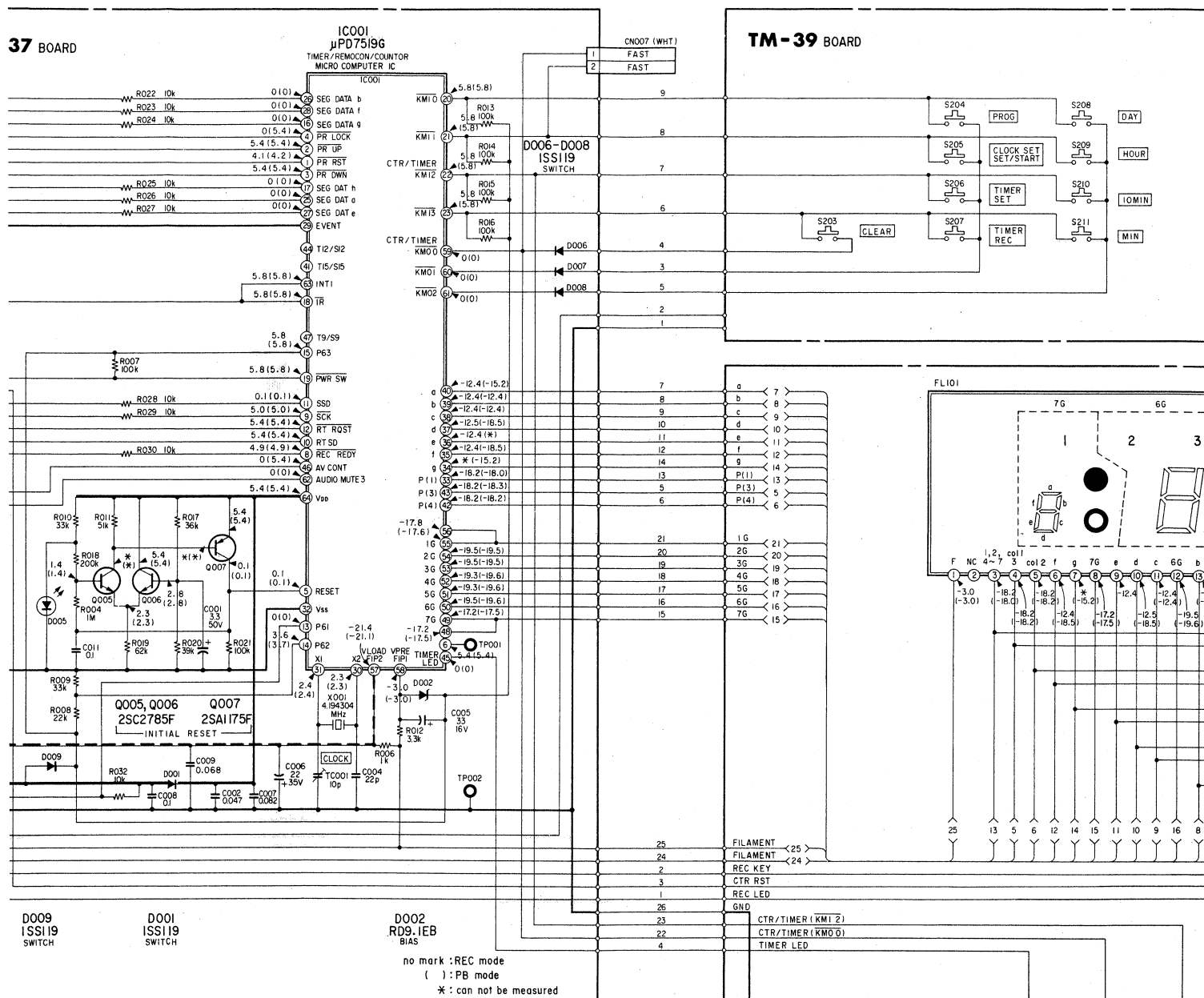
1

— Ref. No. PS-22 BOARD: 6300 series, PS-23 BOARD: 6400 series, TM-37 BOARD: 7000 series, TM-38 BOARD: 7100 series, TM-39 BOARD: 7200 series, VS-1 BOARD: 8000 series, N BOARD: 9600 series —



O P Q R S T U V W X Y Z A1 B1 C1 D1 E1

37 BOARD

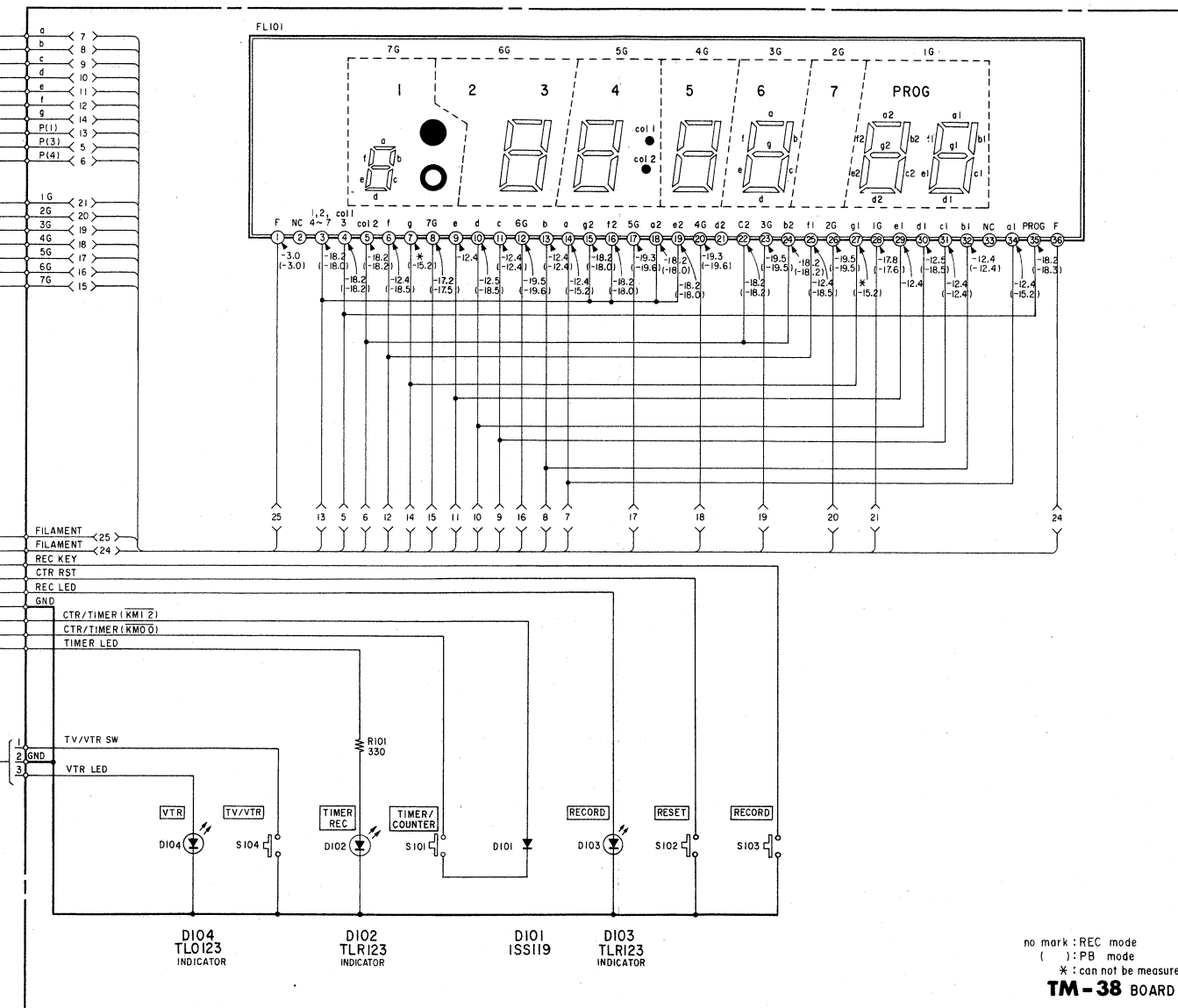


- All resistors are in ohms, 1/6W unless otherwise noted.
- All capacitors are in μF (p:pF) unless otherwise noted. 50V or less are not indicated except for electrolytic capacitors.
- All variable and semi-fixed resistors have characteristic curve B, unless otherwise noted.
- : Nonflammable resistor
- : Fusible resistor
- : B + bus.
- : B - bus.
- The voltage value is a reference value between the grounding when the color bar signal is received from a color bar generator.

The voltage value is measured using a digital tester (10M Ω /V).

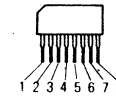
Note: The components identified by shading and mark are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

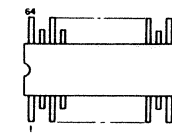


SEMICONDUCTORS

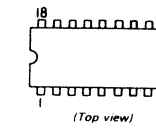
μ PC1391H CX20008
 μ PC1373H CX20061
CX7926



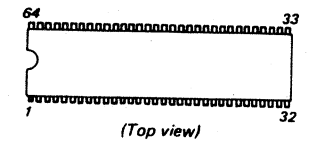
μ PD7519G-033



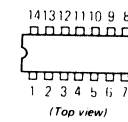
CX882



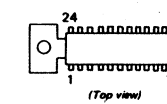
MB88421-113M



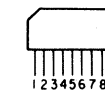
μ PC324C MB84013B
 μ PD4013BC MB84069UB
HD14069UBP TC4013BP
MB3614 TC4069UBP



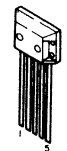
CX134A
CX135



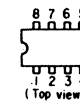
CX894
TA7320P



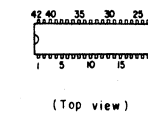
STR1229



μ PC358C
 μ PC4558C
NJM4558D



CX194B-0
CX194B-5



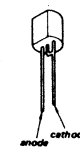
CX7945



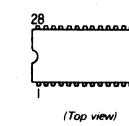
2SA772 2SC1475
2SB739 2SD788
2SB740 2SD789
2SC1474



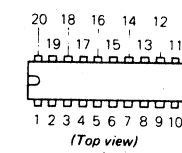
μ PC574J



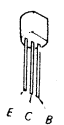
CX862
CX869
CX869A



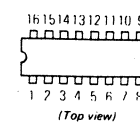
LA7046



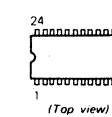
2SA844-C
2SC945-P



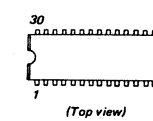
μ PD4053BC
CX870A
CX877
MB84053B
TA7607AP
TC4053BP



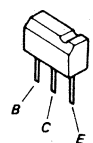
CX864
CX867
CX868



M54836AP



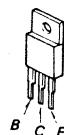
2SA874
2SA881
2SC2673



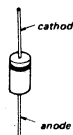
2SA1048GR
2SA1115
2SC403SP
2SC2458
2SC2603



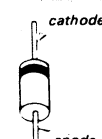
2SD313HP



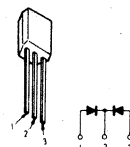
10E-1
10E-2
ERB12-02RK
GP08D



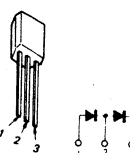
1S1555 RD6.8EB2
1S2076 RD7.5EB2
1S2473 RD9.1E-B
1SS106 RD10EB1
1SS133 RD10EB2
RD5.6EB1 RD10EB3
RD5.6EB2 RD12EL1
RD5.6EB3 RD12EL2
RD6.2E-B RD12EL3
RD13EB2



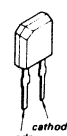
MC921



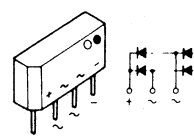
MC931



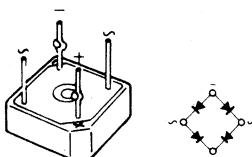
PH302B



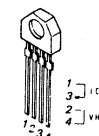
S1VB10-S
S1VB20



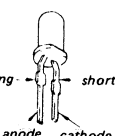
S5VB10
S5VB20



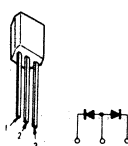
THS103-1



TLG123A
TLO123
TLR123
TLY123
TLR124

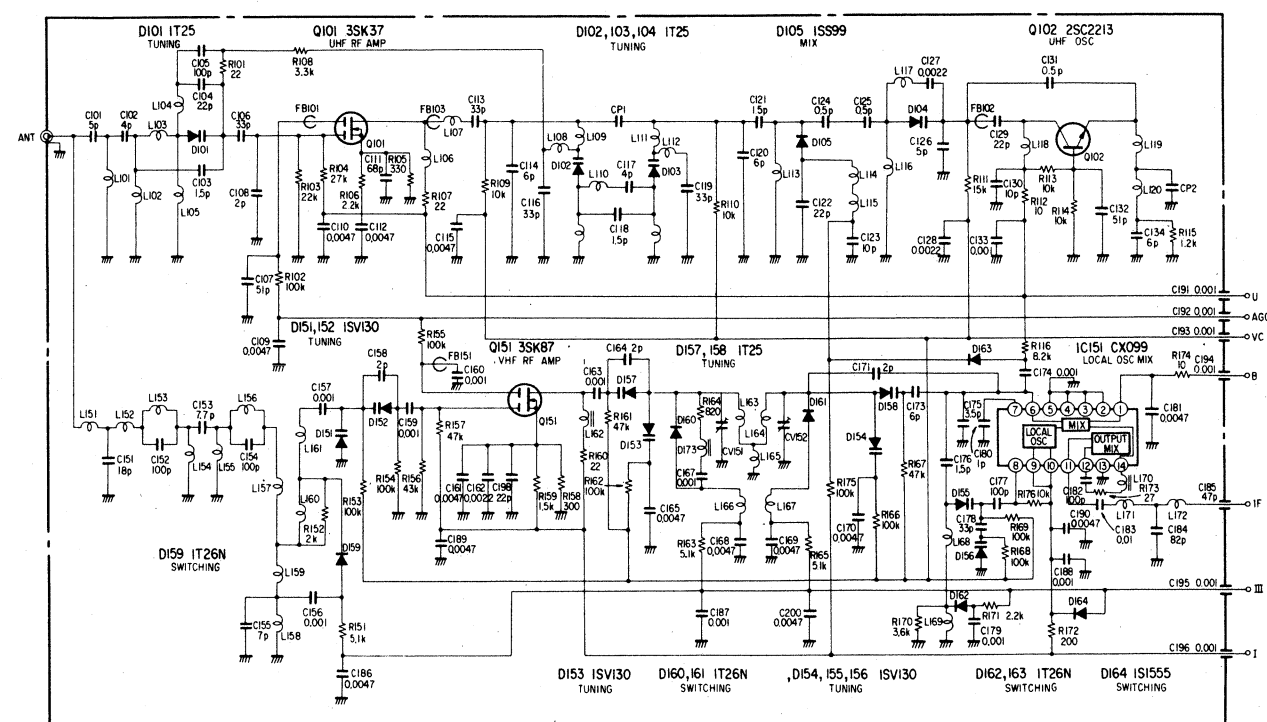


MC911



VHF/UHF TUNER SCHEMATIC DIAGRAMS

• BT-884



Note: Tuner reference numbers are not included in the Electrical Parts List.

SECTION 4 EXPLODED VIEW

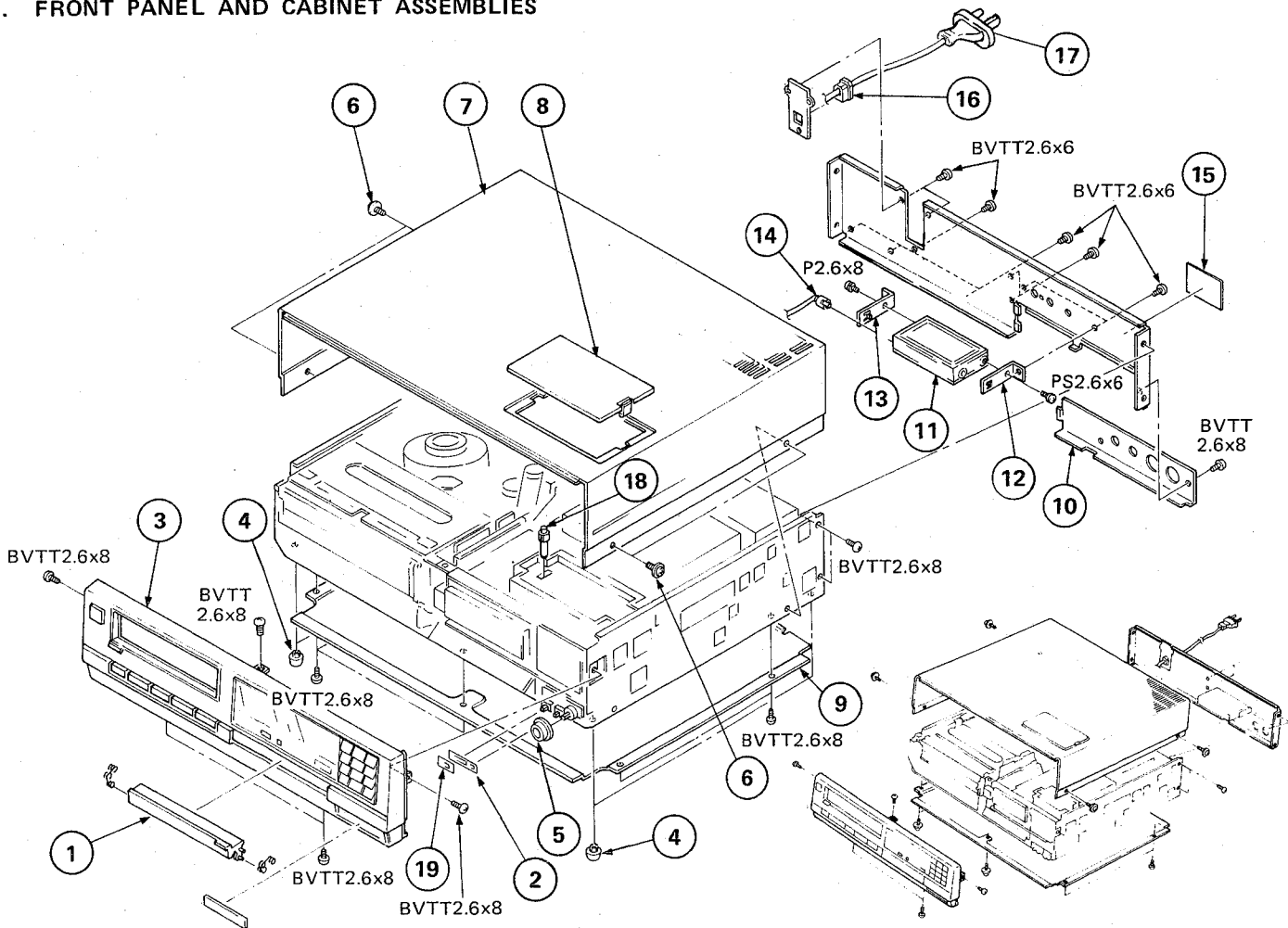
NOTE:

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.

- Items marked "▲" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

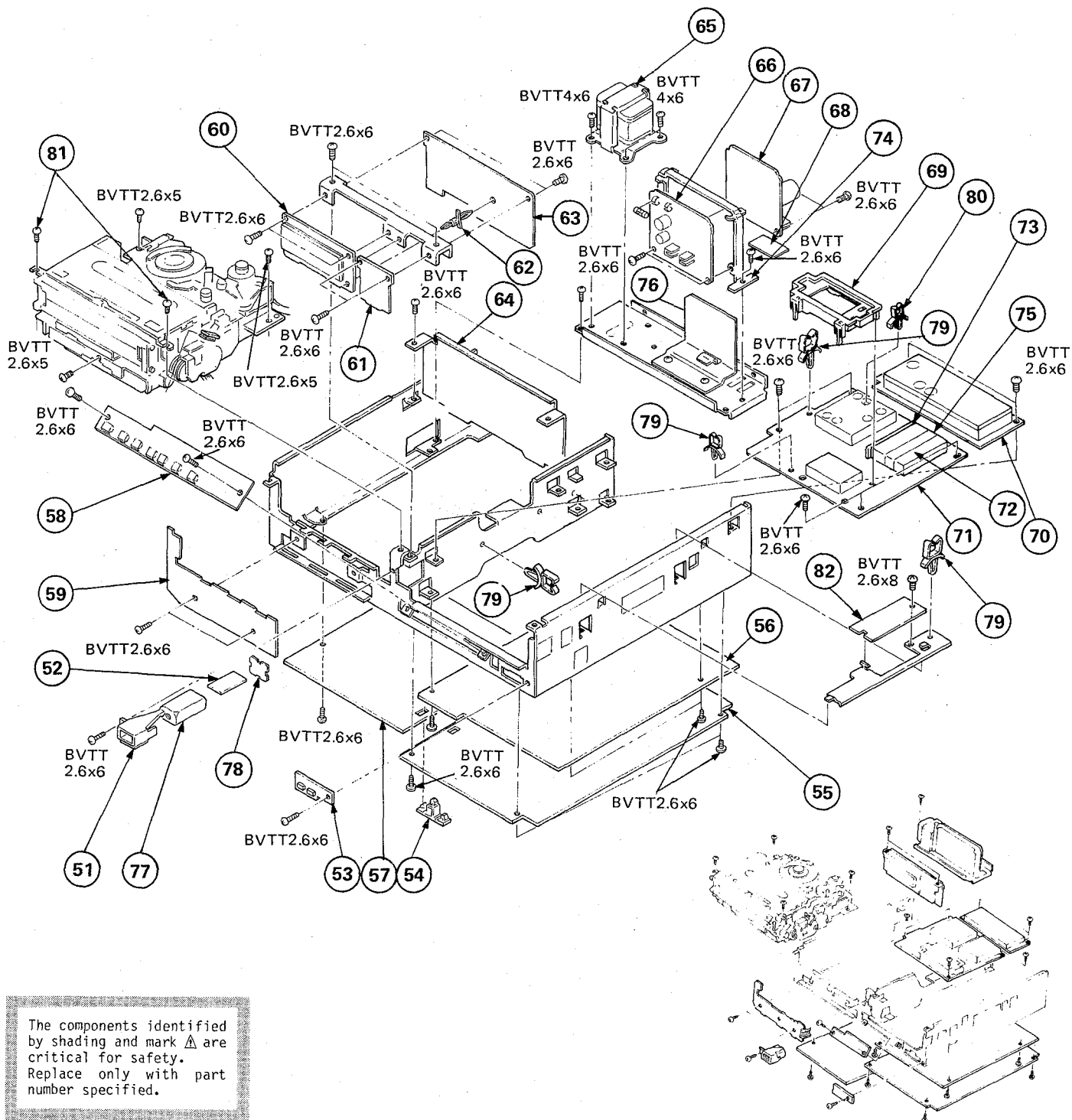
The components identified by shading and mark ▲ are critical for safety. Replace only with part number specified.

1. FRONT PANEL AND CABINET ASSEMBLIES



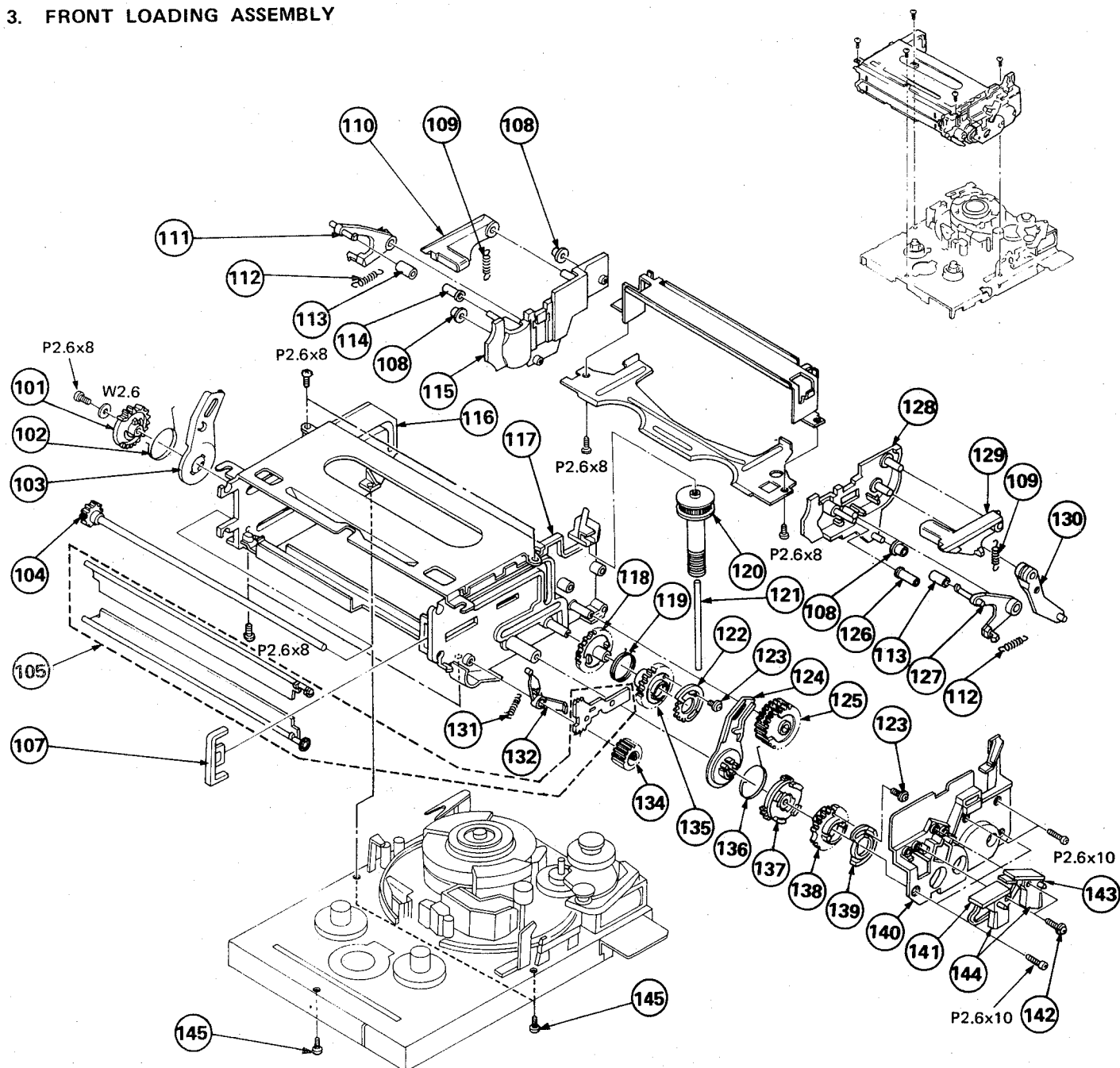
No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
1	X-3681-136-0	DOOR ASSY, TIMER (SILVER)		9	3-681-152-00	PLATE, BOTTOM	
	X-3681-149-0	DOOR ASSY, TIMER (RED)		10	▲3-681-114-00	PANEL, CONNECTOR	
2	3-681-166-00	COVER (LARGE), SL		11	▲1-464-291-00	RF MODULATOR (RFU-813)	
3	A-6703-379-A	PANEL BLOCK ASSY, FRONT (SILVER) 1		12	▲3-681-101-00	BRACKET (RIGHT), RBM	
	A-6703-386-A	PANEL BLOCK ASSY, FRONT (RED) 1		13	▲3-681-102-00	BRACKET (LEFT), RBM	
4	3-670-155-00	LEG		14	▲1-556-934-00	CABLE, PIN	
5	3-681-118-00	KNOB, TRACK CONTROL		15	▲3-681-209-00	LABEL, MODEL NUMBER	
6	3-703-354-01	SCREW (OS), CASE, CLAW		16	▲3-703-244-00	BUSHING, CORD	
7	X-3681-118-0	CASE ASSY, UPPER (SILVER)		17	▲1-551-732-00	CORD, POWER	
	X-3681-140-0	CASE ASSY, UPPER (RED)		18	3-681-186-00	KNOB, TUNING	
8	X-3681-119-0	DOOR ASSY, PRESET (SILVER)		19	3-681-167-00	COVER (SMALL), SL	
	X-3681-139-0	DOOR ASSY, PRESET (RED)					

2. TUNER, TIMER AND POWER ASSEMBLIES



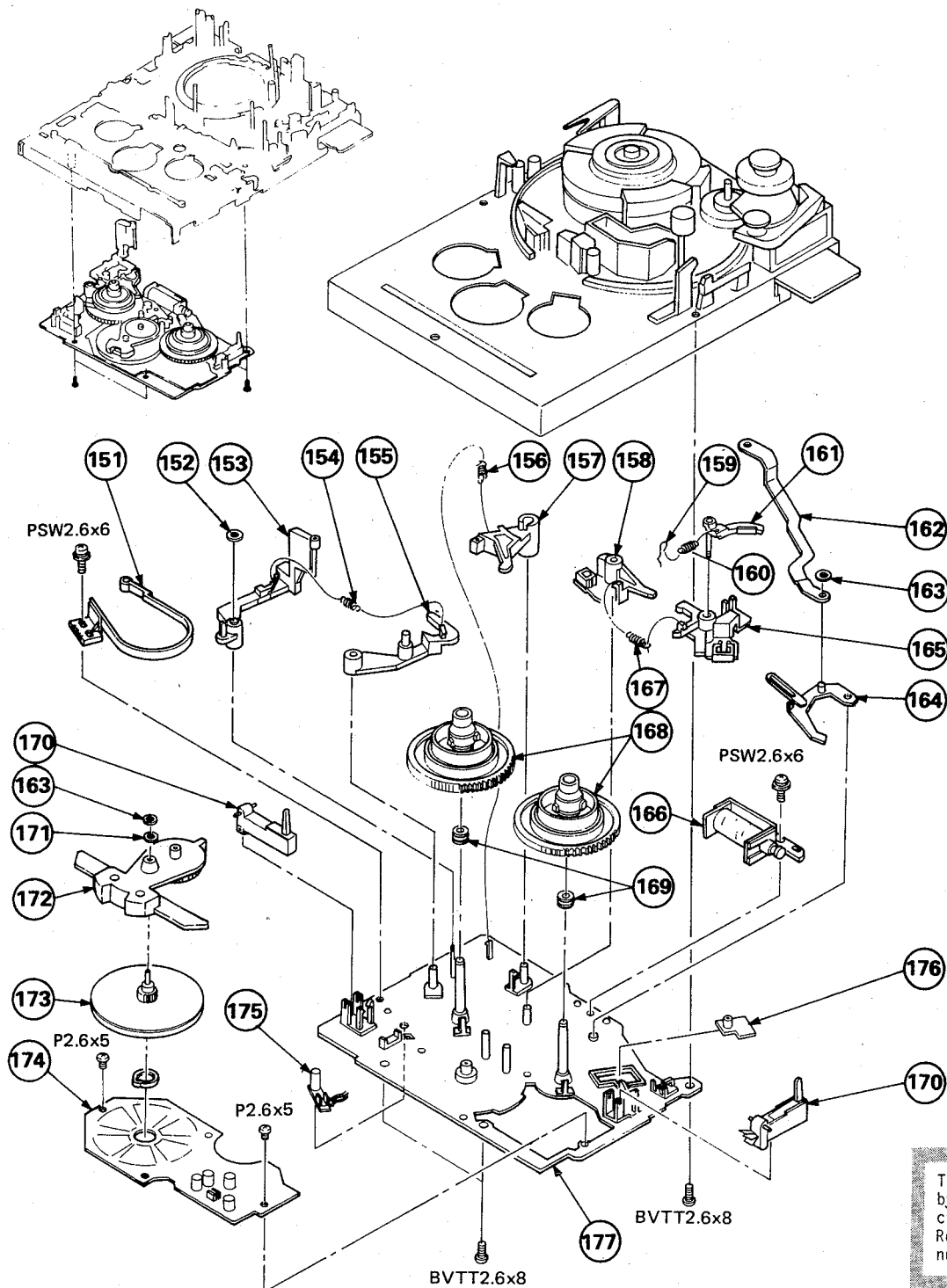
No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
51	3-681-145-00	HOLDER, RAY CATCHER		67	▲1-610-409-00	PS-23 BOARD	
52	▲1-606-794-00	N BOARD		68	3-681-112-00	SHEET, RADIATION	
53	▲1-610-410-00	SW-25 BOARD		69	3-681-146-02	COVER, PRESET	
54	▲3-681-184-00	HOLDER, PC BOARD		70	▲A-6713-175-A	AM-3 BOARD, COMPLETE	
55	▲A-6711-497-A	YC-25 BOARD, COMPLETE		71	▲A-6721-193-A	TU-39 BOARD, COMPLETE	
56	▲A-6715-187-A	SS-16 BOARD, COMPLETE		72	▲1-463-426-00	TUNER (BT-884)	
57	▲A-6711-443-A	RY-1 BOARD, COMPLETE		73	▲1-610-400-00	MT-4 BOARD	
58	▲1-610-405-00	TM-39 BOARD		74	▲3-681-144-00	BRACKET, POWER PC BOARD	
59	▲1-610-406-00	FU-14 BOARD		75	▲3-662-383-00	BAND, RETAINER, TUNER	
60	▲1-610-404-00	TM-38 BOARD		76	3-681-116-00	HEAT SINK	
61	▲1-610-407-00	CH-36 BOARD		77	▲4-342-117-00	CASE, SHIELD (MAIN), R	
62	3-681-127-00	HOLDER, PCB		78	▲4-342-118-00	LID, SHIELD CASE, R	
63	▲1-610-403-00	TM-37 BOARD		79	▲3-655-214-00	CLIP, CABLE	
64	▲3-681-123-00	PLATE, SHIELD		80	▲3-644-407-00	CLIP, AC WIRE E	
65	▲1-447-614-00	TRANSFORMER, POWER	T901	81	3-679-373-00	SCREW (+BV 2.6X6)	
66	▲A-6728-737-A	PS-22 BOARD, COMPLETE		82	▲1-611-175-00	VS-1 BOARD	

3. FRONT LOADING ASSEMBLY



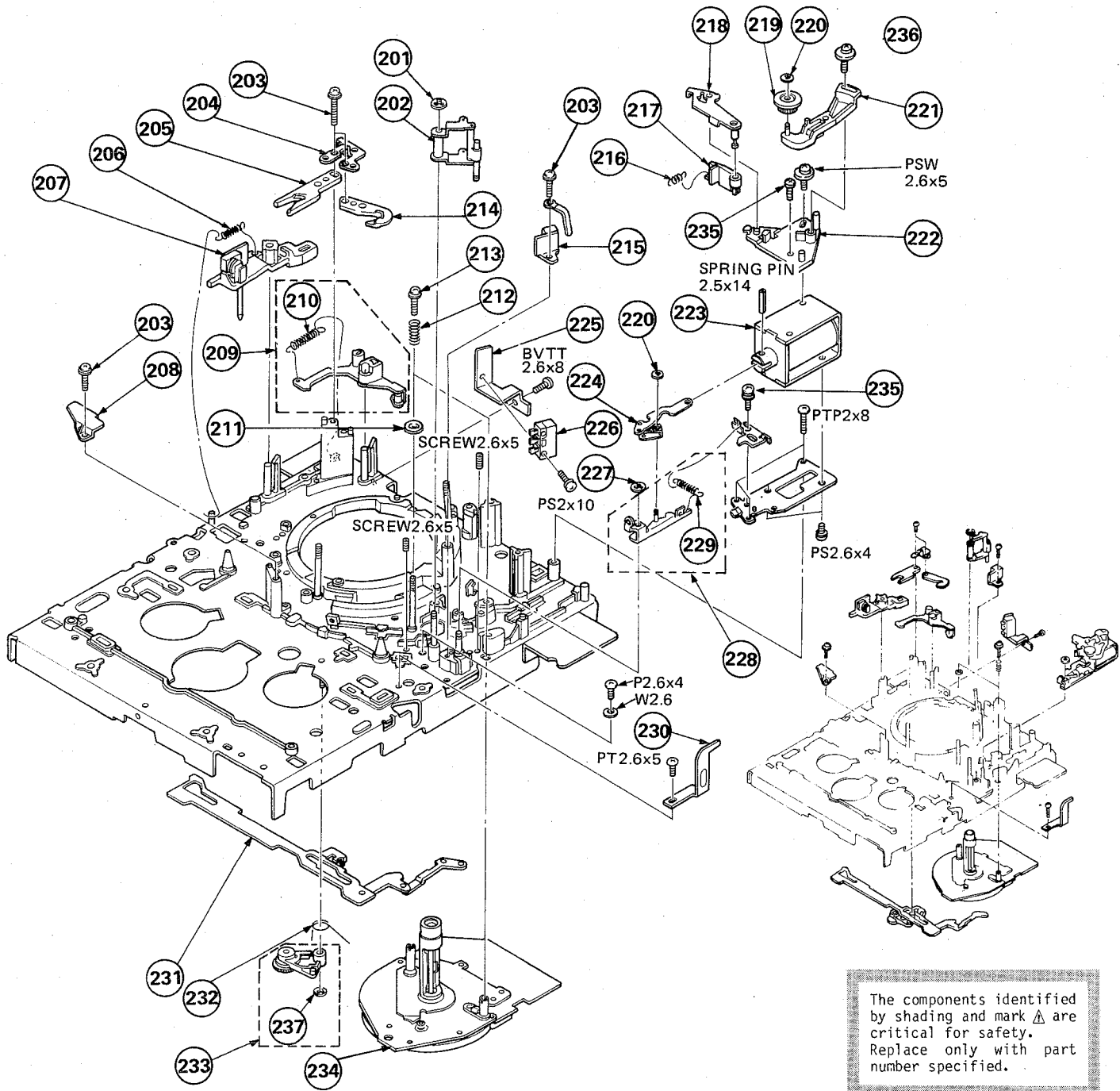
No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
101	3-679-226-00	GEAR (LEFT), ARM, DRIVING		124	3-679-219-00	ARM (RIGHT), DRIVING	
102	3-679-145-00	SPRING (LEFT)		125	3-679-216-00	WHEEL, WORM	
103	3-679-220-00	ARM (LEFT), DRIVING		126	3-679-316-00	ROLLER (LEFT), DRIVING	
104	X-3679-105-0	SHAFT ASSY, GEAR, MIDWAY		127	3-679-129-00	LEVER(RIGHT), RETAINER, CASSETTE	
105	A-6751-183-A	KIT, FL DOOR		128	▲X-3679-106-0	PLATE ASSY, SIDE, BASE RIGHT	
107	3-679-137-00	HOLDER, OUTER DOOR		129	3-679-131-00	LEVER (RIGHT), PREVENTION	
108	3-679-143-00	ROLLER		130	3-679-133-00	ARM, LID OPEN	
109	3-679-188-00	SPRING, TENSION		131	3-679-189-00	SPRING, TENSION	
110	3-679-132-00	LEVER (LEFT), PREVENTION		132	3-679-134-00	ARM, SWITCHING, DOOR	
111	3-679-130-00	LEVER (LEFT), RETAINER, CASSETTE		134	3-679-126-00	GEAR (RIGHT), MIDWAY	
112	3-679-288-00	SPRING, TENSION		135	3-679-218-00	GEAR (B), LIMITER	
113	3-679-135-00	RUBBER, RETAINER, CASSETTE		136	3-679-144-00	SPRING (RIGHT)	
114	3-679-128-00	ROLLER (RIGHT), DRIVING		137	3-679-225-00	GEAR (RIGHT), ARM, DRIVING	
115	▲X-3679-107-0	PLATE ASSY, SIDE, BASE LEFT		138	3-679-125-00	GEAR, DRIVING	
116	▲3-679-266-00	PLATE, SIDE, LEFT		139	3-679-138-00	CAM (CASSETTE ON)	
117	▲3-679-265-00	PLATE, SIDE, RIGHT		140	▲3-679-214-00	HOLDER, GEAR, WORM	
118	3-679-217-04	GEAR (A), LIMITER		141	▲1-609-227-00	CS-3 BOARD	
119	3-679-139-00	SPRING		142	3-669-480-00	+ PTPWH 2	
120	3-679-215-00	GEAR, WORM		143	▲1-609-228-00	CS-4 BOARD	
121	3-679-123-00	SHAFT, GEAR, WORM		144	1-554-241-00	SWITCH, LEVER	
122	3-679-124-00	CAM (CASSETTE OFF)		145	3-679-373-00	SCREW (+ BV2.6X6)	
123	3-669-480-21	+ PTPWH 2					

4. REEL TABLE ASSEMBLY



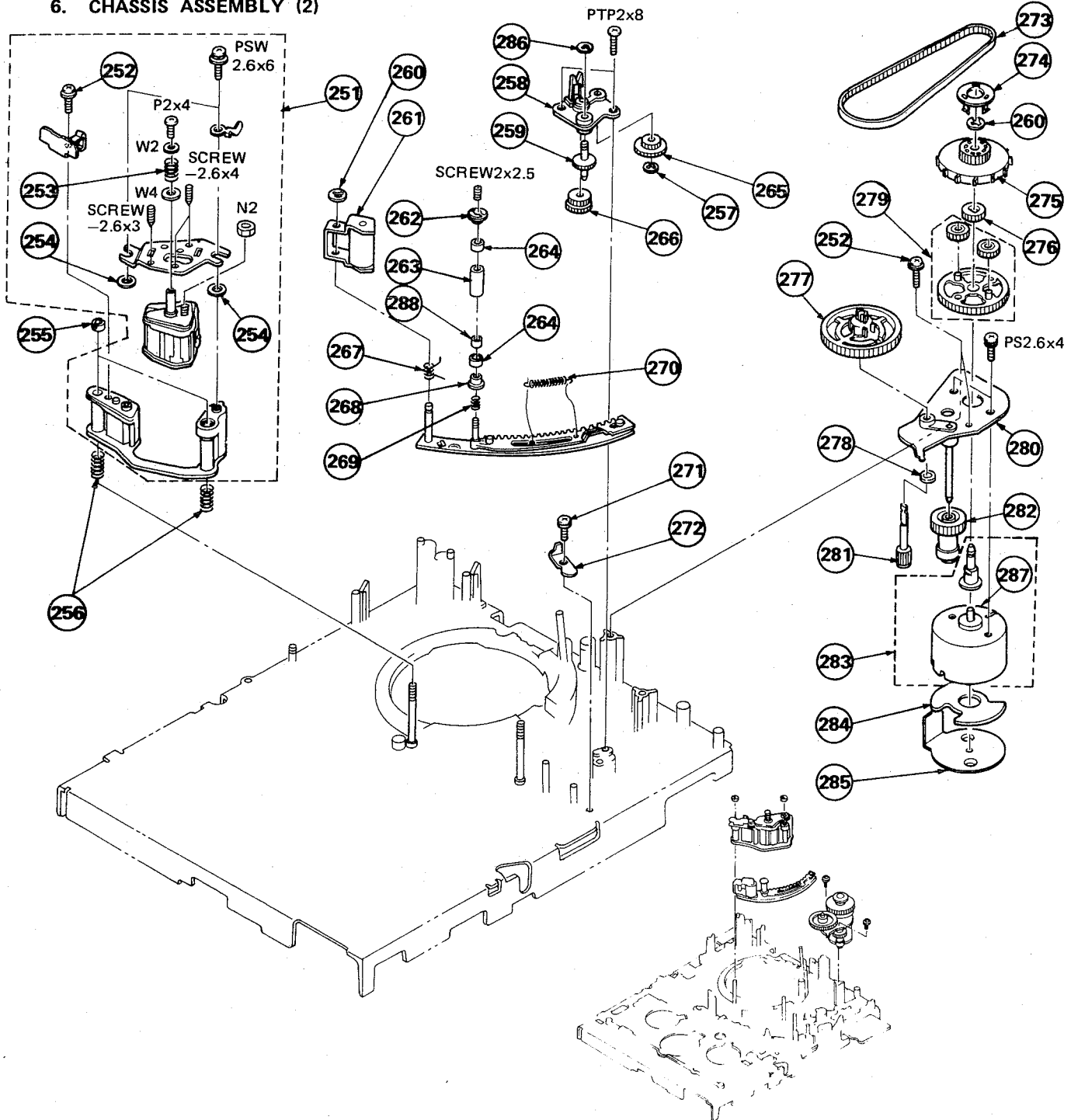
No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
151	X-3679-120-0	BAND ASSY, TENSION REGULATOR		165	X-3679-118-0	BRAKE ASSY, T	
152	3-669-465-00	WASHER (1.5), STOPPER		166	Δ 1-454-348-31	SOLENOID, BRAKE PLUNGER	PM901
153	X-3679-122-0	LEVER ASSY, TENSION REGULATOR		167	3-679-190-02	SPRING, TENSION	
154	3-679-156-00	SPRING, TENSION		168	X-3681-104-0	TABLE ASSY, S REEL	
155	Δ 3-679-230-00	LEVER, FUNCTION		169	3-646-185-00	BEARING	
156	3-679-151-00	SPRING, TENSION		170	1-554-374-00	SWITCH, LEVER	S901, 902
157	Δ 3-679-231-00	LEVER, BRAKE, SOFT		171	3-679-318-00	WASHER, PENDULUM ARM	
158	X-3679-117-0	BRAKE ASSY, S		172	A-6759-074-H	ARM BLOCK ASSY, PENDULUM	
159	Δ 3-681-163-00	HOOK, SPRING, REWIND		173	X-2622-201-0	ROTOR ASSY, R	
160	3-681-156-00	SPRING, TENSION		174	Δ A-4910-021-A	R STATOR BOARD, COMPLETE	M903
161	Δ X-3681-105-0	ARM ASSY, REWIND BRAKE		175	Δ 1-610-401-00	RD-6 BOARD	
162	Δ 3-679-168-00	JOINT, BRAKE, L		176	Δ 1-610-402-00	RD-7 BOARD	
163	3-669-595-00	WASHER (2), STOPPER		177	Δ X-3679-130-0	CHASSIS ASSY, SUB	
164	X-3679-119-0	ARM ASSY, STOPPER, PENDULUM					

5. CHASSIS ASSEMBLY (1)



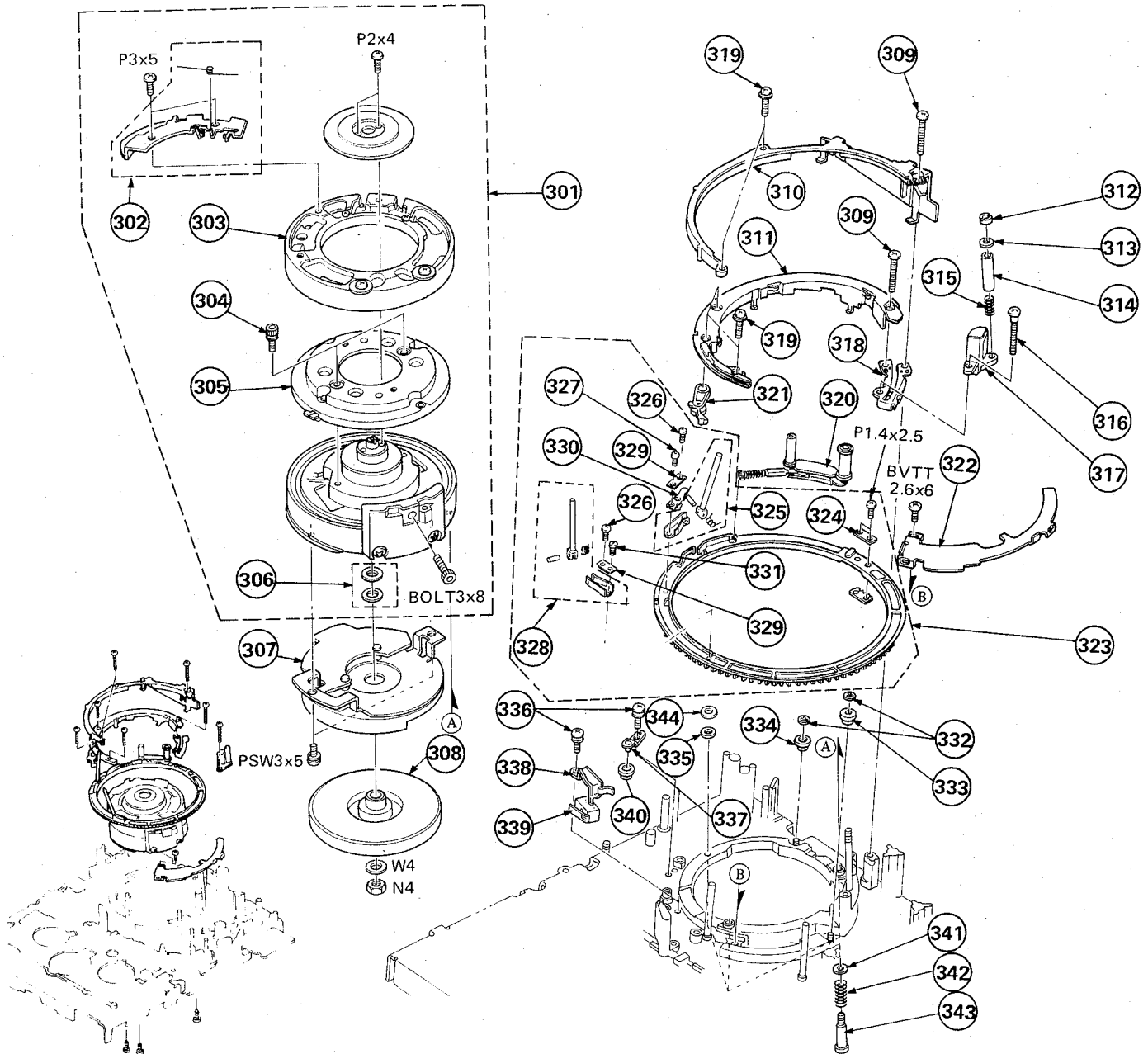
No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
201	3-669-596-00	WASHER (2.3), STOPPER		220	3-669-465-00	WASHER (1.5), STOPPER	
202	Δ: X-3679-108-0	ARM ASSY, PRESS, PINCH	211	221	Δ: X-3679-145-0	ARM ASSY, CAR, TENSION	
203	3-669-480-11	+ PTPWH 2		222	Δ: 3-679-117-00	CHASSIS, ARM, STOPPER	
204	Δ: 3-672-540-00	PLATE, GROUND, TAPE GUIDE		223	Δ: 1-454-349-21	SOLENOID, PLUNGER	PM902
205	Δ: 3-669-618-00	PLATE (2), ADJUST		224	X-3679-152-0	ARM (B) ASSY, PINCH SOLENOID	
206	3-679-164-00	SPRING, TENSION		225	Δ: 3-672-542-00	BRACKET, SWITCH, LE	
207	1-464-249-21	SENSOR, S COIL	L901	226	1-553-539-00	SWITCH, MICRO	S903
208	Δ: 3-669-476-04	PLATE, GUIDE		227	3-669-595-00	WASHER (2), STOPPER	
209	X-3679-149-0	ARM (B) ASSY, LOCK	210	228	Δ: X-3669-379-0	ARM (P) ASSY, PINCH LIMITER	229
210	3-679-323-00	SPRING, TENSION		229	3-465-159-XX	SPRING, TENSION	
211	Δ: 3-669-679-00	SPACER CAPSTAN		230	Δ: 3-679-163-00	PLATE, LID OPEN	
212	3-679-359-00	SPRING, COMPRESSION		231	X-3681-106-0	LEVER ASSY, SLIDE	
213	3-669-633-00	SCREW, + PW2		232	3-681-154-00	SPRING, TORSION	
214	Δ: 3-672-507-00	PLATE (3-1), ADJUSTMENT		233	X-3681-107-0	ARM ASSY, REVIEW BRAKE	237
215	1-464-250-00	SENSOR, T COIL	L902	234	8-838-048-01	MOTOR, DC (BHF-1908A)	M902
216	3-508-108-XX	SPRING, TENSION		235	3-669-607-31	+PSW (SMALL ROUND) (2.6)	
217	Δ: 3-679-251-00	LIMITER, STOPPER		236	3-681-231-00	SCREW (+ PW2.6X8), TAPPING	
218	Δ: X-3679-123-0	ARM ASSY, STOPPER		237	3-701-436-11	WASHER, 1.6	
219	3-679-307-00	GEAR, TENSION					

6. CHASSIS ASSEMBLY (2)



No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
251	A-6761-060-A	ACE ASSY	252, 253, 254	270	3-549-014-00	SPRING, TENSION	
252	3-669-480-11	+ PTPWH 2		271	3-669-607-31	+PSW (SMALL ROUND) (2.6)	
253	3-669-316-00	SPRING, COMPRESSION		272	3-679-165-00	STOPPER, SLIDER	
254	3-669-598-00	WASHER, CTL		273	3-679-119-00	BELT, SYNCHRO	
255	3-669-318-00	NUT, ADJUSTMENT, GUIDE		274	3-679-140-00	FLANGE, GEAR, INTERNAL	
256	3-669-317-00	SPRING, COMPRESSION		275	3-679-101-00	GEAR, INTERNAL	
257	3-669-465-00	WASHER (1.5), STOPPER		276	3-679-104-00	GEAR	
258	X-3679-147-0	CHASSIS (B) ASSY, DRIVE GEAR		277	3-679-115-00	GEAR (LARGE), LOADING	
259	X-3679-148-0	GEAR (F) ASSY (B)		278	3-701-439-11	WASHER	
260	3-669-596-00	WASHER (2.3), STOPPER		279	X-3679-111-0	CARRIER ASSY	
261	X-3669-307-6	ARM ASSY, PINCH ROLLER		280	3-679-112-0	CHASSIS ASSY, GEAR, PLANET	
262	3-669-431-00	FLANGE (UPPER), GUIDE		281	3-679-114-00	GEAR (SMALL), LOADING	
263	3-669-438-00	ROLLER, GUIDE		282	X-3669-321-0	GEAR (C) ASSY	
264	3-669-443-00	BEARING, BALL (NO FLANGE)		283	A-6737-118-A	MOTOR ASSY, L	M904 287
265	3-669-337-00	GEAR (D)		284	1-605-071-00	LM-8 BOARD	
266	3-669-338-00	GEAR (E)		285	3-669-613-00	INSULATOR, L MOTOR	
267	3-669-444-00	SPRING, TORSION		286	3-669-595-00	WASHER (2), STOPPER	
268	3-669-432-00	FLANGE (LOWER), GUIDE		287	1-541-163-00	MOTOR	
269	3-669-452-00	SPRING, COMPRESSION		288	3-657-841-31	SPACER (2X2.5)	

7. DRUM AND S LOADING ASSEMBLIES



No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
301	A-6050-187-A	DRUM ASSY (DSH-35A-R)	302,303,304,305,306	324	▲:3-669-616-00	RETAINER	
302	A-6760-066-B	SPRING ASSY, TAPE RETAINER		325	▲:X-3669-430-0	HOLDER BLOCK ASSY, #3 GUIDE	
303	A-6760-138-A	DRUM ASSY, UPPER		326	3-669-478-00	SCREW (1X3), TAPPING	
304	3-669-157-00	BOLT (WASHER) (2.6X8)		327	3-669-479-11	SCREW (1.4X3.5), TAPPING	
305	A-6762-122-A	DISK ASSY		328	▲:X-3669-429-0	HOLDER BLOCK ASSY, #2 GUIDE	
306	X-3669-105-0	SPACER BLOCK ASSY		329	▲:3-669-472-02	RETAINER, SPRING, LEAF	
307	X-2621-204-0	STATOR ASSY, D		330	3-672-583-00	SPRING	
308	X-2621-202-0	ROTOR ASSY, D		331	3-672-586-00	SCREW (1.4X3), TAPPING	
309	3-669-466-00	SCREW (M 2.6)		332	3-669-465-00	WASHER (1.5), STOPPER	
310	▲:3-669-585-00	GUIDE (2), SHUTTLE		333	3-669-597-00	ROLLER (B), RING	
311	▲:3-679-290-00	GUIDE (1-YA), SHUTTLE		334	3-669-630-00	ROLLER (C), RING	
312	3-669-446-00	NUT, GUIDE, NO. 6		335	▲:3-669-646-11	SPACER, DRUM	
313	3-679-910-00	FLANGE(S), GUIDE, NO. 6		336	3-669-607-31	+PSW (SMALL ROUND) (2.6)	
314	3-669-445-00	SPACER, GUIDE, NO. 6		337	▲:X-3669-329-0	PLATE ASSY, ADJUSTMENT	
315	3-669-615-00	SPRING, COMPRESSION		338	▲:3-669-355-00	HOLDER, SWITCH, ULE	
316	3-669-606-00	SCREW (2.6)		339	1-553-718-00	SWITCH, MICRO	
317	8-825-508-10	HEAD, FE		340	3-669-360-00	ROLLER, RING	
318	▲:X-3669-313-0	BASE ASSY, SLANT		341	3-669-600-11	WASHER, FLAT (3.5)	
319	3-669-480-11	+ PTPWH 2		342	3-429-123-00	SPRING	
320	A-6750-108-B	SHUTTLE BLOCK ASSY, THREADING		343	3-669-302-00	SCREW, FITTING	
	X-3669-327-0	ARM ASSY, SWITCH, ULE		344	▲:3-669-646-00	SPACER, DRUM	
322	▲:3-669-477-00	LINER, LINK, PIN					
323	X-3679-150-0	RING (YA) ASSY, S LOADING	324,325,326 327,328,329,330,331				

S904

8. HARDWARE LIST

SCREW

7-621-259-32 SCREW +P 2.6X5
7-621-259-35 SCREW +P 2.6X5
7-628-253-45 SCREW +PS 2X10
7-628-253-95 SCREW +PS 2.6X4

7-628-254-15 SCREW +PS 2.6X6
7-685-134-14 SCREW +P 2.6X8 TYPE2 NON-SLIT
7-685-135-14 SCREW +P 2.6X10 TYPE2 NON-SLIT
7-685-534-19 SCREW +BTP 2.6X8 TYPE2 N-S
7-685-791-04 SCREW +PTT 2.6X5 (S)

7-685-861-09 SCREW +BVTT 2.6X5 (S)
7-685-862-01 SCREW +BVTT 2.6X6 (S)
7-685-863-01 SCREW +BVTT 2.6X8 (S)
7-685-880-01 SCREW +BVTT 4X6 (S)
7-627-551-08 SCREW, PRECISION +P 1.4X1.6

7-627-551-28 SCREW, PRECISION +P 1.4X2.5
7-621-759-35 +PSW, 2.6X5
7-621-759-45 +PSW, 2.6X6

SET-SCREW

7-621-712-26 SET-SCREW, SLOT 2.6X3FLAT POINT
7-621-712-35 SET-SCREW, SLOT 2.6X4CONE POINT
7-621-712-46 SET-SCREW, SLOT 2.6X5FLAT POINT

TAPPING SCREW

7-685-105-14 TPG +P 2X8, TYPE 2, NON-SLIT

SPRING PIN

7-626-302-31 SPRING PIN, 2.5X14

NUT

7-622-205-05 N 2, TYPE 2

WASHER

7-688-002-11 W 2.6, MIDDLE
7-688-004-02 W 4, SMALL

R STATOR RY-1

SECTION 5

ELECTRICAL PARTS LIST

NOTE:

The components identified by shading and mark **A** are critical for safety. Replace only with part number specified.

• =>: Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.

• Items marked "A" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

• All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

CAPACITORS
• MF : μ F, PF : μ F

RESISTORS
• All resistors are in ohms
• F : nonflammable

COILS
• MMH : mH, UH : μ H

When indicating parts by reference number, please include the board name.

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
	▲:A-4910-021-A	R STATOR BOARD, COMPLETE (REEL MOTOR BOARD)			▲:A-6711-443-A	RY-1 BOARD, COMPLETE	
	▲:1-560-460-00	PIN, CONNECTOR 4P			▲:3-681-177-00	CASE (MAIN), SHIELD, RY	
		CAPACITOR			▲:3-681-178-00	LID, UPPER, SHIELD CASE, RY	
C1	1-123-821-00	ELECT 47 MF	20% 16V		▲:3-681-179-00	LID, BOTTOM, SHIELD CASE, RY	
C2	1-123-821-00	ELECT 47 MF	20% 16V			CAPACITOR	
C3	1-123-821-00	ELECT 47 MF	20% 16V	C001	1-161-021-00	CERAMIC 0.047 MF	10% 25V
C4	1-123-821-00	ELECT 47 MF	20% 16V	C002	1-123-330-00	ELECT 22MF	20% 16V
		DIODE		C003	1-161-021-00	CERAMIC 0.047 MF	10% 25V
D1	8-719-941-48	DIODE 1N4148TP		C004	1-161-021-00	CERAMIC 0.047 MF	10% 25V
		IC		C005	1-161-021-00	CERAMIC 0.047 MF	10% 25V
IC1	8-759-108-77	IC CX-877		C006	1-123-305-00	ELECT 33MF	20% 10V
		TRANSISTOR		C007	1-123-380-00	ELECT 1MF	20% 50V
Q1	8-729-100-01	TRANSISTOR 2SD992		C008	1-123-380-00	ELECT 1MF	20% 50V
Q2	8-729-100-01	TRANSISTOR 2SD992		C009	1-101-004-00	CERAMIC 0.01MF	50V
Q3	8-729-100-01	TRANSISTOR 2SD992		C010	1-161-021-00	CERAMIC 0.047 MF	10% 25V
Q4	8-729-100-01	TRANSISTOR 2SD992		C011	1-161-013-00	CERAMIC 0.01MF	10% 25V
Q5	8-729-100-01	TRANSISTOR 2SD992		C012	1-123-330-00	ELECT 22MF	20% 16V
Q6	8-729-100-01	TRANSISTOR 2SD992		C013	1-161-013-00	CERAMIC 0.01MF	10% 25V
		RESISTOR		C014	1-161-019-00	CERAMIC 0.033MF	10% 25V
R1	1-247-823-00	CARBON 470 5% 1/6W		C015	1-102-973-00	CERAMIC 100PF	5% 50V
R2	1-247-823-00	CARBON 470 5% 1/6W		C016	1-161-021-00	CERAMIC 0.047 MF	10% 25V
R3	1-247-823-00	CARBON 470 5% 1/6W		C017	1-161-021-00	CERAMIC 0.047 MF	10% 25V
R4	1-247-829-00	CARBON 820 5% 1/6W		C018	1-123-381-00	ELECT 2.2MF	20% 50V
R5	1-247-871-00	CARBON 47K 5% 1/6W		C019	1-161-021-00	CERAMIC 0.047 MF	10% 25V
R6	1-247-871-00	CARBON 47K 5% 1/6W		C020	1-161-017-00	CERAMIC 0.022MF	10% 25V
R7	1-247-871-00	CARBON 47K 5% 1/6W		C021	1-123-356-00	ELECT 10MF	20% 16V
R8	1-247-871-00	CARBON 47K 5% 1/6W		C022	1-102-951-00	CERAMIC 15PF	5% 50V
		DIODE		C023	1-102-951-00	CERAMIC 15PF	5% 50V
S1	8-719-810-31	DIODE THS103-1		C024	1-161-013-00	CERAMIC 0.01MF	10% 25V
S2	8-719-810-31	DIODE THS103-1		C026	1-161-013-00	CERAMIC 0.01MF	10% 25V
				C027	1-123-356-00	ELECT 10MF	20% 16V
				C028	1-161-017-00	CERAMIC 0.022MF	10% 25V
				C029	1-161-017-00	CERAMIC 0.022MF	10% 25V
				C030	1-161-013-00	CERAMIC 0.01MF	10% 25V
				C031	1-161-025-00	CERAMIC 0.1MF	10% 25V
				C032	1-161-013-00	CERAMIC 0.01MF	10% 25V
				C035	1-101-005-00	CERAMIC 0.022MF	50V
				C036	1-123-318-00	ELECT 33MF	20% 16V
				C037	1-102-851-00	CERAMIC 15PF	5% 50V
				C038	1-161-025-00	CERAMIC 0.1MF	10% 25V
				C039	1-102-981-00	CERAMIC 300PF	5% 50V
				C040	1-102-981-00	CERAMIC 300PF	5% 50V
				C041	1-102-976-00	CERAMIC 180PF	5% 50V
				C044	1-102-515-00	CERAMIC 24PF	5% 50V
				C045	1-161-025-00	CERAMIC 0.1MF	10% 25V
				C046	1-161-021-00	CERAMIC 0.047 MF	10% 25V
				C047	1-161-021-00	CERAMIC 0.047 MF	10% 25V
				C048	1-101-005-00	CERAMIC 0.022MF	50V
				C049	1-123-318-00	ELECT 33MF	20% 16V
				C051	1-123-318-00	ELECT 33MF	20% 16V

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Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
C052	1-101-005-00	CERAMIC	0.022MF	50V	C119	1-102-958-00	CERAMIC 20PF 5% 50V
C053	1-101-005-00	CERAMIC	0.022MF	50V	C122	1-101-006-00	CERAMIC 0.047MF 50V
C054	1-102-112-00	CERAMIC	330PF	10% 50V	C123	1-102-513-00	CERAMIC 18PF 5% 50V
C055	1-101-006-00	CERAMIC	0.047MF	50V	C124	1-102-958-00	CERAMIC 20PF 5% 50V
C056	1-102-112-00	CERAMIC	330PF	10% 50V	C125	1-102-958-00	CERAMIC 20PF 5% 50V
C057	1-102-948-00	CERAMIC	11PF	5% 50V	C126	1-102-114-00	CERAMIC 470PF 10% 50V
C058	1-102-112-00	CERAMIC	330PF	10% 50V	<u>CONNECTOR</u>		
C059	1-123-328-00	ELECT	4.7MF	20% 25V	CN001	1-508-848-00	PIN, CONNECTOR 6P
C060	1-102-119-00	CERAMIC	0.0015MF	10% 50V	CN002	1-564-030-00	PIN, CONNECTOR 5P
C061	1-101-004-00	CERAMIC	0.01MF	50V	CN003	1-564-028-00	PIN, CONNECTOR 3P
C062	1-123-318-00	ELECT	33MF	20% 16V	<u>DIODE</u>		
C063	1-101-006-00	CERAMIC	0.047MF	50V	D001	8-719-911-19	DIODE 1SS119
C065	1-161-013-00	CERAMIC	0.01MF	10% 25V	D002	8-719-911-19	DIODE 1SS119
C066	1-101-005-00	CERAMIC	0.022MF	50V	D003	8-719-911-19	DIODE 1SS119
C067	1-161-013-00	CERAMIC	0.01MF	10% 25V	D004	8-719-911-19	DIODE 1SS119
C068	1-161-013-00	CERAMIC	0.01MF	10% 25V	D005	8-719-000-12	DIODE MC931
C069	1-161-013-00	CERAMIC	0.01MF	10% 25V	D007	8-719-911-19	DIODE 1SS119
C070	1-123-356-00	ELECT	10MF	20% 16V	D008	8-719-911-19	DIODE 1SS119
C071	1-101-004-00	CERAMIC	0.01MF	50V	D010	8-719-911-19	DIODE 1SS119
C073	1-102-511-00	CERAMIC	13PF	5% 50V	D011	8-719-911-19	DIODE 1SS119
C074	1-102-522-00	CERAMIC	51PF	5% 50V	D012	8-719-100-68	DIODE RD13EB2
C075	1-102-522-00	CERAMIC	51PF	5% 50V	<u>DELAY LINE</u>		
C076	1-102-511-00	CERAMIC	13PF	5% 50V	DL001	1-415-312-00	DELAY LINE (1H)
C077	1-101-006-00	CERAMIC	0.047MF	50V	<u>IC</u>		
C078	1-123-356-00	ELECT	10MF	20% 16V	IC001	8-758-620-00	IC CX-862
C079	1-123-307-00	ELECT	100MF	20% 10V	IC002	8-759-601-34	IC CX-134A
C080	1-123-380-00	ELECT	1MF	20% 50V	IC003	8-759-608-64	IC CX-864
C083	1-123-296-00	ELECT	220MF	20% 6.3V	IC004	8-751-350-00	IC CX-135
C084	1-123-296-00	ELECT	220MF	20% 6.3V	<u>COIL</u>		
C085	1-102-511-00	CERAMIC	13PF	5% 50V	L001	1-408-429-00	MICRO INDUCTOR 470UH
C086	1-102-522-00	CERAMIC	51PF	5% 50V	L002	1-408-878-00	MICRO INDUCTOR 0.33UH
C087	1-102-522-00	CERAMIC	51PF	5% 50V	L003	1-408-878-00	MICRO INDUCTOR 0.33UH
C088	1-102-511-00	CERAMIC	13PF	5% 50V	L004	1-408-421-00	MICRO INDUCTOR 100UH
C092	1-102-529-00	CERAMIC	100PF	5% 50V	L005	1-408-425-00	MICRO INDUCTOR 220UH
C093	1-123-332-00	ELECT	47MF	20% 16V	L006	1-408-425-00	MICRO INDUCTOR 220UH
C094	1-101-004-00	CERAMIC	0.01MF	50V	L007	1-407-502-00	MICRO INDUCTOR 6.8MMH
C096	1-123-356-00	ELECT	10MF	20% 16V	L008	1-407-502-00	MICRO INDUCTOR 6.8MMH
C097	1-101-005-00	CERAMIC	0.022MF	50V	L009	1-408-414-00	MICRO INDUCTOR 27UH
C098	1-123-318-00	ELECT	33MF	20% 16V	L010	1-408-414-00	MICRO INDUCTOR 27UH
C099	1-123-328-00	ELECT	4.7MF	20% 25V	L012	1-407-717-00	MICRO INDUCTOR 1MMH
C100	1-102-519-00	CERAMIC	36PF	5% 50V	L014	1-408-410-00	MICRO INDUCTOR 12UH
C101	1-102-529-00	CERAMIC	100PF	5% 50V	L015	1-408-423-00	MICRO INDUCTOR 150UH
C103	1-102-508-00	CERAMIC	10PF	0.5PF 50V	L017	1-408-423-00	MICRO INDUCTOR 150UH
C105	1-101-005-00	CERAMIC	0.022MF	50V	L018	1-408-415-00	MICRO INDUCTOR 33UH
C106	1-123-328-00	ELECT	4.7MF	20% 25V	L019	1-408-421-00	MICRO INDUCTOR 100UH
C107	1-102-976-00	CERAMIC	180PF	5% 50V	L020	1-408-412-00	MICRO INDUCTOR 18UH
C108	1-102-823-00	CERAMIC	430PF	5% 50V	L021	1-408-412-00	MICRO INDUCTOR 18UH
C109	1-102-821-00	CERAMIC	360PF	5% 50V	L022	1-408-422-00	MICRO INDUCTOR 120UH
C111	1-102-851-00	CERAMIC	15PF	5% 50V			
C113	1-101-059-00	CERAMIC	510PF	5% 50V			
C115	1-123-328-00	ELECT	4.7MF	20% 25V			
C117	1-101-006-00	CERAMIC	0.047MF	50V			
C118	1-102-958-00	CERAMIC	20PF	5% 50V			

When indicating parts by reference number, please include the board name.

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Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
L023	1-408-424-00	MICRO INDUCTOR 180UH		R006	1-247-855-00	CARBON 10K 5% 1/6W	
L024	1-408-422-00	MICRO INDUCTOR 120UH		R007	1-247-852-00	CARBON 7.5K 5% 1/6W	
L025	1-408-422-00	MICRO INDUCTOR 120UH		R008	1-247-855-00	CARBON 10K 5% 1/6W	
L026	1-408-424-00	MICRO INDUCTOR 180UH		R009	1-247-844-00	CARBON 3.6K 5% 1/6W	
L027	1-408-422-00	MICRO INDUCTOR 120UH		R010	1-247-867-00	CARBON 33K 5% 1/6W	
L028	1-408-423-00	MICRO INDUCTOR 150UH		R011	1-247-807-00	CARBON 100 5% 1/6W	
L029	1-408-416-00	MICRO INDUCTOR 39UH		R012	1-247-855-00	CARBON 10K 5% 1/6W	
L030	1-408-416-00	MICRO INDUCTOR 39UH		R013	1-247-855-00	CARBON 10K 5% 1/6W	
L031	1-408-421-00	MICRO INDUCTOR 100UH		R014	1-247-831-00	CARBON 1K 5% 1/6W	
L032	1-408-411-00	MICRO INDUCTOR 15UH		R015	1-247-827-00	CARBON 680 5% 1/6W	
L033	1-408-423-00	MICRO INDUCTOR 150UH		R016	1-247-827-00	CARBON 680 5% 1/6W	
L034	1-408-417-00	MICRO INDUCTOR 47UH		R017	1-247-835-00	CARBON 1.5K 5% 1/6W	
L035	1-408-416-00	MICRO INDUCTOR 39UH		R018	1-247-835-00	CARBON 1.5K 5% 1/6W	
L036	1-407-170-XX	MICRO INDUCTOR 120UH		R019	1-247-844-00	CARBON 3.6K 5% 1/6W	
				R020	1-247-844-00	CARBON 3.6K 5% 1/6W	
TRANSISTOR				R021	1-247-831-00	CARBON 1K 5% 1/6W	
Q001	=>8-7 29-245-83	TRANSISTOR 2SC 2458		R022	1-247-867-00	CARBON 33K 5% 1/6W	
Q002	=>8-7 29-204-83	TRANSISTOR 2SA1048-GR		R023	1-247-871-00	CARBON 47K 5% 1/6W	
Q003	=>8-7 29-245-83	TRANSISTOR 2SC 2458		R024	1-247-847-00	CARBON 4.7K 5% 1/6W	
Q004	=>8-7 29-245-83	TRANSISTOR 2SC 2458		R025	1-247-847-00	CARBON 4.7K 5% 1/6W	
Q005	=>8-7 29-245-83	TRANSISTOR 2SC 2458		R026	1-247-855-00	CARBON 10K 5% 1/6W	
Q006	=>8-7 29-245-83	TRANSISTOR 2SC 2458		R027	1-247-847-00	CARBON 4.7K 5% 1/6W	
Q008	=>8-7 29-384-46	TRANSISTOR 2SA844-C		R028	1-247-855-00	CARBON 10K 5% 1/6W	
Q009	8-7 29-603-50	TRANSISTOR 2SC 403SP		R029	1-247-824-00	CARBON 510 5% 1/6W	
Q010	8-7 29-603-50	TRANSISTOR 2SC 403SP		R030	1-247-824-00	CARBON 510 5% 1/6W	
Q011	=>8-7 29-384-46	TRANSISTOR 2SA844-C		R031	1-247-779-00	CARBON 6.8 5% 1/6W	
Q012	8-7 29-603-50	TRANSISTOR 2SC 403SP		R032	1-247-822-00	CARBON 430 5% 1/6W	
Q013	8-7 29-603-50	TRANSISTOR 2SC 403SP		R033	1-247-815-00	CARBON 220 5% 1/6W	
Q014	8-7 29-603-50	TRANSISTOR 2SC 403SP		R034	△ 1-212-855-00	FUSIBLE 8.2 5% 1/4W F	
Q015	=>8-7 29-384-46	TRANSISTOR 2SA844-C		R035	1-247-839-00	CARBON 2.2K 5% 1/6W	
Q016	8-7 29-603-50	TRANSISTOR 2SC 403SP		R036	1-247-839-00	CARBON 2.2K 5% 1/6W	
Q017	=>8-7 29-384-46	TRANSISTOR 2SA844-C		R037	1-247-831-00	CARBON 1K 5% 1/6W	
Q018	8-7 29-603-50	TRANSISTOR 2SC 403SP		R038	1-247-831-00	CARBON 1K 5% 1/6W	
Q019	8-7 29-603-50	TRANSISTOR 2SC 403SP		R039	1-247-839-00	CARBON 2.2K 5% 1/6W	
Q021	8-7 29-603-50	TRANSISTOR 2SC 403SP		R040	1-247-839-00	CARBON 2.2K 5% 1/6W	
Q022	8-7 29-603-50	TRANSISTOR 2SC 403SP		R041	1-247-833-00	CARBON 1.2K 5% 1/6W	
Q023	8-7 29-603-50	TRANSISTOR 2SC 403SP		R042	△ 1-212-855-00	FUSIBLE 8.2 5% 1/4W F	
Q024	8-7 29-603-50	TRANSISTOR 2SC 403SP		R043	1-247-847-00	CARBON 4.7K 5% 1/6W	
Q025	=>8-7 29-384-46	TRANSISTOR 2SA844-C		R044	1-247-849-00	CARBON 5.6K 5% 1/6W	
Q028	=>8-7 29-384-46	TRANSISTOR 2SA844-C		R045	1-247-849-00	CARBON 5.6K 5% 1/6W	
Q029	=>8-7 29-384-46	TRANSISTOR 2SA844-C		R046	1-247-809-00	CARBON 120 5% 1/6W	
Q033	=>8-7 29-384-46	TRANSISTOR 2SA844-C		R047	1-247-844-00	CARBON 3.6K 5% 1/6W	
Q034	8-7 29-603-50	TRANSISTOR 2SC 403SP		R048	1-247-839-00	CARBON 2.2K 5% 1/6W	
Q035	8-7 29-603-50	TRANSISTOR 2SC 403SP		R049	1-247-814-00	CARBON 200 5% 1/6W	
Q036	8-7 29-603-50	TRANSISTOR 2SC 403SP		R050	1-247-840-00	CARBON 2.4K 5% 1/6W	
Q037	8-7 29-603-50	TRANSISTOR 2SC 403SP		R051	1-247-818-00	CARBON 300 5% 1/6W	
RESISTOR				R052	1-247-834-00	CARBON 1.3K 5% 1/6W	
R001	1-247-819-00	CARBON 330 5% 1/6W		R053	1-247-830-00	CARBON 910 5% 1/6W	
R002	1-247-783-00	CARBON 10 5% 1/6W		R054	1-247-835-00	CARBON 1.5K 5% 1/6W	
R003	1-247-819-00	CARBON 330 5% 1/6W		R055	1-247-855-00	CARBON 10K 5% 1/6W	
R004	1-247-783-00	CARBON 10 5% 1/6W		R056	1-247-836-00	CARBON 1.6K 5% 1/6W	
R005	1-247-863-00	CARBON 22K 5% 1/6W		R057	1-247-849-00	CARBON 5.6K 5% 1/6W	
				R058	1-247-832-00	CARBON 1.1K 5% 1/6W	

The components identified by shading and mark △ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

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Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
R059	1-247-837-00	CARBON	1.8K 5% 1/6W	R134	1-247-869-00	CARBON	39K 5% 1/6W
R060	1-247-814-00	CARBON	200 5% 1/6W	R135	1-247-866-00	CARBON	30K 5% 1/6W
R061	1-247-839-00	CARBON	2.2K 5% 1/6W	R136	1-247-831-00	CARBON	1K 5% 1/6W
R062	1-247-810-00	CARBON	130 5% 1/6W	R137	1-247-831-00	CARBON	1K 5% 1/6W
R063	1-247-825-00	CARBON	560 5% 1/6W	R138	1-247-835-00	CARBON	1.5K 5% 1/6W
R064	1-247-839-00	CARBON	2.2K 5% 1/6W	R139	1-247-831-00	CARBON	1K 5% 1/6W
R065	1-247-842-00	CARBON	3K 5% 1/6W	R140	1-247-831-00	CARBON	1K 5% 1/6W
R066	1-247-821-00	CARBON	390 5% 1/6W	R141	1-247-831-00	CARBON	1K 5% 1/6W
R067	1-247-863-00	CARBON	22K 5% 1/6W	R150	1-247-874-00	CARBON	62K 5% 1/6W
R068	1-247-863-00	CARBON	22K 5% 1/6W	R151	1-247-874-00	CARBON	62K 5% 1/6W
R069	1-247-819-00	CARBON	330 5% 1/6W	R152	1-247-890-00	CARBON	300K 5% 1/6W
R071	1-247-812-00	CARBON	160 5% 1/6W	R153	1-247-811-00	CARBON	150 5% 1/6W
R072	1-247-831-00	CARBON	1K 5% 1/6W	R154	1-247-834-00	CARBON	1.3K 5% 1/6W
R073	1-247-855-00	CARBON	10K 5% 1/6W	R155	1-247-837-00	CARBON	1.8K 5% 1/6W
R074	1-247-832-00	CARBON	1.1K 5% 1/6W	R156	1-247-817-00	CARBON	270 5% 1/6W
R075	1-247-832-00	CARBON	1.1K 5% 1/6W	R157	1-247-811-00	CARBON	150 5% 1/6W
R077	1-247-859-00	CARBON	15K 5% 1/6W	R158	1-247-829-00	CARBON	820 5% 1/6W
R078	1-247-855-00	CARBON	10K 5% 1/6W	R159	1-247-839-00	CARBON	2.2K 5% 1/6W
R079	1-247-842-00	CARBON	3K 5% 1/6W	R160	1-247-821-00	CARBON	390 5% 1/6W
R080	1-247-867-00	CARBON	33K 5% 1/6W	R162	1-247-831-00	CARBON	1K 5% 1/6W
R081	1-247-824-00	CARBON	510 5% 1/6W	R163	1-247-863-00	CARBON	22K 5% 1/6W
R082	1-247-838-00	CARBON	2K 5% 1/6W	R164	1-247-863-00	CARBON	22K 5% 1/6W
R086	1-247-811-00	CARBON	150 5% 1/6W	R165	1-247-834-00	CARBON	1.3K 5% 1/6W
R087	1-247-866-00	CARBON	30K 5% 1/6W	R166	1-247-807-00	CARBON	100 5% 1/6W
R088	1-247-844-00	CARBON	3.6K 5% 1/6W	R167	1-247-834-00	CARBON	1.3K 5% 1/6W
R089	1-247-847-00	CARBON	4.7K 5% 1/6W	R169	1-247-812-00	CARBON	160 5% 1/6W
R090	1-247-831-00	CARBON	1K 5% 1/6W	R170	1-247-819-00	CARBON	330 5% 1/6W
R091	1-247-883-00	CARBON	150K 5% 1/6W	R171	1-247-831-00	CARBON	1K 5% 1/6W
R092	1-247-867-00	CARBON	33K 5% 1/6W	R172	1-247-855-00	CARBON	10K 5% 1/6W
R095	1-247-869-00	CARBON	39K 5% 1/6W	R173	1-247-839-00	CARBON	2.2K 5% 1/6W
R096	1-247-807-00	CARBON	100 5% 1/6W	R177	1-247-831-00	CARBON	1K 5% 1/6W
R099	1-247-849-00	CARBON	5.6K 5% 1/6W	R178	1-247-825-00	CARBON	560 5% 1/6W
R100	1-247-817-00	CARBON	270 5% 1/6W	R179	1-247-857-00	CARBON	12K 5% 1/6W
R101	1-247-817-00	CARBON	270 5% 1/6W				
R102	1-247-861-00	CARBON	18K 5% 1/6W				
R103	1-247-824-00	CARBON	510 5% 1/6W				
R104	1-247-883-00	CARBON	150K 5% 1/6W				
R105	1-247-838-00	CARBON	2K 5% 1/6W				
R106	1-247-835-00	CARBON	1.5K 5% 1/6W				
R108	1-247-837-00	CARBON	1.8K 5% 1/6W				
R109	1-247-837-00	CARBON	1.8K 5% 1/6W				
R110	1-247-849-00	CARBON	5.6K 5% 1/6W				
R111	1-247-879-00	CARBON	100K 5% 1/6W				
R112	1-247-827-00	CARBON	680 5% 1/6W				
R113	1-247-831-00	CARBON	1K 5% 1/6W				
R115	1-247-833-00	CARBON	1.2K 5% 1/6W				
R116	1-247-826-00	CARBON	620 5% 1/6W				
R117	1-247-826-00	CARBON	620 5% 1/6W				
R118	1-247-837-00	CARBON	1.8K 5% 1/6W				
R119	1-247-837-00	CARBON	1.8K 5% 1/6W				
R122	1-247-823-00	CARBON	470 5% 1/6W				
R123	1-247-824-00	CARBON	510 5% 1/6W				
R126	1-247-845-00	CARBON	3.9K 5% 1/6W				

VARIABLE RESISTOR

RV001	1-226-847-00	RES, ADJ, CARBON 1K
RV002	1-226-848-00	RES, ADJ, CARBON 2.2K
RV003	1-228-991-00	RES, ADJ, METAL GLAZE 2.2K
RV004	1-228-991-00	RES, ADJ, METAL GLAZE 2.2K
RV005	1-228-746-00	RES, ADJ, CARBON 2.2K
RV006	1-228-753-00	RES, ADJ, CARBON 470K
RV007	1-228-745-00	RES, ADJ, CARBON 1K
RV008	1-226-851-00	RES, ADJ, CARBON 10K
RV009	1-228-750-00	RES, ADJ, CARBON 47K
RV010	1-228-750-00	RES, ADJ, CARBON 47K
RV011	1-228-994-00	RES, ADJ, METAL GLAZE 10K
RV012	1-228-991-00	RES, ADJ, METAL GLAZE 2.2K
RV013	1-228-745-00	RES, ADJ, CARBON 1K
RV014	1-226-850-00	RES, ADJ, CARBON 4.7K

When indicating parts by reference number, please include the board name.

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Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
C116	1-102-114-00	CERAMIC	470PF 10% 50V	C316	1-101-004-00	CERAMIC	0.01MF 50V
C117	1-123-328-00	ELECT	4.7MF 20% 25V	C317	1-102-520-00	CERAMIC	39PF 50V
C118	1-123-356-00	ELECT	10MF 20% 16V	C318	1-101-006-00	CERAMIC	0.047MF 50V
C119	1-123-356-00	ELECT	10MF 20% 16V	<u>FILTER</u>			
C120	1-123-318-00	ELECT	33MF 20% 16V	CF001	1-527-874-00	FILTER, CERAMIC	
C121	1-123-318-00	ELECT	33MF 20% 16V	CF002	1-527-875-00	FILTER, CERAMIC	
C122	1-123-328-00	ELECT	4.7MF 20% 25V	<u>CONNECTOR</u>			
C123	1-123-328-00	ELECT	4.7MF 20% 25V	CN001	1-564-032-00	PIN, CONNECTOR 7P	
C124	1-101-004-00	CERAMIC	0.01MF 50V	CN002	1-564-033-00	PIN, CONNECTOR 8P	
C125	1-101-006-00	CERAMIC	0.047MF 50V	CN003	1-560-891-00	PIN, CONNECTOR 3P	
C126	1-101-884-00	CERAMIC	56PF 5% 50V	CN004	1-560-895-00	PIN, CONNECTOR 7P	
C127	1-101-006-00	CERAMIC	0.047MF 50V	CN005	1-560-894-00	PIN, CONNECTOR 6P	
C128	1-101-006-00	CERAMIC	0.047MF 50V	CN006	1-560-892-00	PIN, CONNECTOR 4P	
C129	1-102-960-00	CERAMIC	24PF 5% 50V	CN007	1-560-894-00	PIN, CONNECTOR 6P	
C130	1-101-004-00	CERAMIC	0.01MF 50V	CN008	1-560-895-00	PIN, CONNECTOR 7P	
C131	1-101-006-00	CERAMIC	0.047MF 50V	<u>JACK</u>			
C132	1-101-884-00	CERAMIC	56PF 5% 50V	CN009	1-507-840-00	JACK, MINIATURE	
C133	1-102-937-00	CERAMIC	4PF 0.25PF 50V	<u>TRIMMER</u>			
C134	1-101-004-00	CERAMIC	0.01MF 50V	CV001	1-141-275-00	CAP, TRIMMER	
C135	1-101-004-00	CERAMIC	0.01MF 50V	<u>DIODE</u>			
C136	1-123-380-00	ELECT	1MF 20% 50V	D001	=>8-719-911-19	DIODE 1SS119	
C137	1-108-569-00	MYLAR	0.0039MF 5% 50V	D004	=>8-719-100-35	DIODE RD5.6EB2	
C138	1-123-356-00	ELECT	10MF 20% 16V	D005	8-719-000-12	DIODE MC931	
C139	1-123-332-00	ELECT	47MF 20% 16V	D009	8-719-000-06	DIODE MC921	
C140	1-101-006-00	CERAMIC	0.047MF 50V	D013	=>8-719-911-19	DIODE 1SS119	
C141	1-123-318-00	ELECT	33MF 20% 16V	D016	=>8-719-911-19	DIODE 1SS119	
C142	1-101-005-00	CERAMIC	0.022MF 50V	D017	=>8-719-911-19	DIODE 1SS119	
C143	1-123-333-00	ELECT	100MF 20% 16V	D018	=>8-719-911-19	DIODE 1SS119	
C144	1-101-004-00	CERAMIC	0.01MF 50V	D019	=>8-719-911-19	DIODE 1SS119	
C145	1-161-025-00	CERAMIC	0.1MF 10% 25V	D020	=>8-719-911-19	DIODE 1SS119	
C147	1-123-330-00	ELECT	22MF 20% 16V	D022	=>8-719-911-19	DIODE 1SS119	
C148	1-123-356-00	ELECT	10MF 20% 25V	D028	=>8-719-100-57	DIODE RD10EB2	
C150	1-123-356-00	ELECT	10MF 20% 16V	D031	=>8-719-911-19	DIODE 1SS119	
C155	1-123-311-00	ELECT	1000MF 20% 10V	D032	=>8-719-911-19	DIODE 1SS119	
C157	1-123-356-00	ELECT	10MF 20% 16V	D035	=>8-719-911-19	DIODE 1SS119	
C159	1-123-356-00	ELECT	10MF 20% 16V	D036	=>8-719-911-19	DIODE 1SS119	
C161	1-123-356-00	ELECT	10MF 20% 16V	D037	=>8-719-911-19	DIODE 1SS119	
C162	1-161-021-00	CERAMIC	0.047MF 10% 25V	<u>DELAY LINE</u>			
C163	1-101-004-00	CERAMIC	0.01MF 50V	DL001	1-415-282-00	DELAY LINE (2H)	
C164	1-101-006-00	CERAMIC	0.047MF 50V	DL002	1-415-313-00	DELAY LINE (1H)	
C167	1-101-006-00	CERAMIC	0.047MF 50V	<u>IC</u>			
C168	1-123-356-00	ELECT	10MF 20% 16V	IC001	8-758-691-00	IC CX-869A	
C170	1-102-904-00	CERAMIC	110PF 5% 50V	IC002	8-759-208-94	IC CX-894	
C301	1-101-004-00	CERAMIC	0.01MF 50V	IC003	8-759-608-82	IC CX-882	
C303	1-123-328-00	ELECT	4.7MF 20% 25V	IC004	8-752-000-80	IC CX20008	
C305	1-161-021-00	CERAMIC	0.047MF 10% 25V	IC005	8-757-945-00	IC CX-7945	
C307	1-123-356-00	ELECT	10MF 20% 16V	IC006	8-759-600-08	IC CX-870A	
C308	1-161-021-00	CERAMIC	0.047MF 10% 25V				
C309	1-161-021-00	CERAMIC	0.047MF 10% 25V				
C310	1-161-021-00	CERAMIC	0.047MF 10% 25V				
C311	1-161-021-00	CERAMIC	0.047MF 10% 25V				
C314	1-102-978-00	CERAMIC	220PF 5% 50V				
C315	1-101-004-00	CERAMIC	0.01MF 50V				

When indicating parts by reference number, please include the board name.

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
IC009	8-759-208-94	IC CX-894		Q024	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
IC010	8-759-273-20	IC TA7320P		Q025	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
IC011	8-759-240-13	IC TC4013BP		Q026	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
IC012	8-759-240-69	IC TC4069UBP		Q027	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
IC013	8-759-208-67	IC CX-867		Q028	=>8-7 29-204-83	TRANSISTOR 2SA1048-GR	
IC014	8-759-908-68	IC CX-868		Q029	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
IC015	8-750-000-74	IC CX20061		Q030	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
IC016	8-759-979-26	IC CX-7926		Q031	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
<u>COIL</u>				Q033	=>8-7 29-204-83	TRANSISTOR 2SA1048-GR	
L001	1-408-420-00	MICRO INDUCTOR 82UH		Q034	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
L002	1-408-427-00	MICRO INDUCTOR 330UH		Q035	=>8-7 29-204-83	TRANSISTOR 2SA1048-GR	
L003	1-407-503-00	MICRO INDUCTOR 8.2MMH		Q036	=>8-7 29-204-83	TRANSISTOR 2SA1048-GR	
L004	1-408-408-00	MICRO INDUCTOR 8.2UH		Q037	=>8-7 29-204-83	TRANSISTOR 2SA1048-GR	
L005	1-408-429-00	MICRO INDUCTOR 470UH		Q038	=>8-7 29-204-83	TRANSISTOR 2SA1048-GR	
	1-408-623-00	MICRO INDUCTOR 470UH		Q039	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
L006	1-407-503-00	MICRO INDUCTOR 8.2MMH		Q040	=>8-7 29-204-83	TRANSISTOR 2SA1048-GR	
L007	1-408-412-00	MICRO INDUCTOR 18UH		Q041	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
L008	1-408-426-00	MICRO INDUCTOR 270UH		Q042	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
L009	1-408-429-00	MICRO INDUCTOR 470UH		Q043	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
	1-408-623-00	MICRO INDUCTOR 470UH		Q044	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
L010	1-407-503-00	MICRO INDUCTOR 8.2MMH		Q045	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
L011	1-408-408-00	MICRO INDUCTOR 8.2UH		Q046	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
L012	1-408-406-00	MICRO INDUCTOR 5.6UH		Q047	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
L013	1-407-496-00	MICRO INDUCTOR 2.2MMH		Q048	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
L014	1-407-500-00	MICRO INDUCTOR 4.7MMH		Q049	=>8-7 29-204-83	TRANSISTOR 2SA1048-GR	
L015	1-407-163-XX	MICRO INDUCTOR 33UH		Q050	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
<u>FILTER</u>				Q051	=>8-7 29-204-83	TRANSISTOR 2SA1048-GR	
LPF001	1-235-097-00	FILTER, LOW PASS		Q052	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
<u>VARIABLE COIL</u>				Q053	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
LV002	1-408-512-00	COIL (VARIABLE)		Q054	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
<u>IC LINK</u>				Q055	8-7 29-113-33	TRANSISTOR 2SB733-3	
PS001A	1-532-685-00	LINK, IC		Q056	8-7 29-113-33	TRANSISTOR 2SB733-3	
<u>TRANSISTOR</u>				Q068	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
Q001	=>8-7 29-245-83	TRANSISTOR 2SC 2458		Q069	=>8-7 29-204-83	TRANSISTOR 2SA1048-GR	
Q002	=>8-7 29-245-83	TRANSISTOR 2SC 2458		Q07 2	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
Q003	=>8-7 29-245-83	TRANSISTOR 2SC 2458		<u>RESISTOR</u>			
Q006	8-7 29-603-50	TRANSISTOR 2SC 403SP		R001	1-247-831-00	CARBON 1K 5% 1/6W	
Q007	=>8-7 29-245-83	TRANSISTOR 2SC 2458		R002	1-247-831-00	CARBON 1K 5% 1/6W	
Q008	=>8-7 29-245-83	TRANSISTOR 2SC 2458		R003	1-247-821-00	CARBON 390 5% 1/6W	
Q009	=>8-7 29-245-83	TRANSISTOR 2SC 2458		R004	1-247-835-00	CARBON 1.5K 5% 1/6W	
Q013	8-7 29-603-50	TRANSISTOR 2SC 403SP		R005	1-247-855-00	CARBON 10K 5% 1/6W	
Q014	8-7 29-603-50	TRANSISTOR 2SC 403SP		R006	1-247-867-00	CARBON 33K 5% 1/6W	
Q015	8-7 29-603-50	TRANSISTOR 2SC 403SP		R007	1-247-855-00	CARBON 10K 5% 1/6W	
Q017	=>8-7 29-245-83	TRANSISTOR 2SC 2458		R008	1-247-831-00	CARBON 1K 5% 1/6W	
Q019	=>8-7 29-245-83	TRANSISTOR 2SC 2458		R009	1-247-831-00	CARBON 1K 5% 1/6W	
Q020	=>8-7 29-245-83	TRANSISTOR 2SC 2458		R010	1-247-870-00	CARBON 43K 5% 1/6W	
Q021	=>8-7 29-245-83	TRANSISTOR 2SC 2458		R011	1-247-865-00	CARBON 27K 5% 1/6W	
				R012	1-247-875-00	CARBON 68K 5% 1/6W	
				R018	1-247-873-00	CARBON 56K 5% 1/6W	
				R019	1-247-873-00	CARBON 56K 5% 1/6W	
				R020	1-247-847-00	CARBON 4.7K 5% 1/6W	

The components identified by shading and mark **A** are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

YC-25

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
R021	1-247-831-00	CARBON	1K 5% 1/6W	R105	1-247-855-00	CARBON	10K 5% 1/6W
R022	1-247-873-00	CARBON	56K 5% 1/6W	R106	1-247-831-00	CARBON	1K 5% 1/6W
R023	1-247-863-00	CARBON	22K 5% 1/6W	R107	1-247-821-00	CARBON	390 5% 1/6W
R024	1-247-873-00	CARBON	56K 5% 1/6W	R108	1-247-821-00	CARBON	390 5% 1/6W
R025	1-247-871-00	CARBON	47K 5% 1/6W	R109	1-247-831-00	CARBON	1K 5% 1/6W
R026	1-247-871-00	CARBON	47K 5% 1/6W	R110	1-247-835-00	CARBON	1.5K 5% 1/6W
R027	1-247-869-00	CARBON	39K 5% 1/6W	R111	1-247-831-00	CARBON	1K 5% 1/6W
R028	1-247-871-00	CARBON	47K 5% 1/6W	R112	1-247-855-00	CARBON	10K 5% 1/6W
R029	1-247-852-00	CARBON	7.5K 5% 1/6W	R113	1-247-863-00	CARBON	22K 5% 1/6W
R044	1-247-847-00	CARBON	4.7K 5% 1/6W	R114	1-247-855-00	CARBON	10K 5% 1/6W
R045	1-247-863-00	CARBON	22K 5% 1/6W	R115	1-247-863-00	CARBON	22K 5% 1/6W
R047	1-247-821-00	CARBON	390 5% 1/6W	R116	1-247-867-00	CARBON	33K 5% 1/6W
R048	1-247-839-00	CARBON	2.2K 5% 1/6W	R117	1-247-867-00	CARBON	33K 5% 1/6W
R049	1-247-821-00	CARBON	390 5% 1/6W	R119	1-247-843-00	CARBON	3.3K 5% 1/6W
R050	1-247-821-00	CARBON	390 5% 1/6W	R120	1-247-855-00	CARBON	10K 5% 1/6W
R051	1-247-821-00	CARBON	390 5% 1/6W	R121	1-247-855-00	CARBON	10K 5% 1/6W
R052	1-247-821-00	CARBON	390 5% 1/6W	R123	1-247-831-00	CARBON	1K 5% 1/6W
R053	1-247-821-00	CARBON	390 5% 1/6W	R124	1-247-825-00	CARBON	560 5% 1/6W
R054	1-247-839-00	CARBON	2.2K 5% 1/6W	R125	1-247-860-00	CARBON	16K 5% 1/6W
R055	1-247-839-00	CARBON	2.2K 5% 1/6W	R126	1-247-873-00	CARBON	56K 5% 1/6W
R057	1-247-855-00	CARBON	10K 5% 1/6W	R127	1-247-831-00	CARBON	1K 5% 1/6W
R059	1-247-855-00	CARBON	10K 5% 1/6W	R128	1-247-824-00	CARBON	510 5% 1/6W
R063	1-247-841-00	CARBON	2.7K 5% 1/6W	R129	1-247-838-00	CARBON	2K 5% 1/6W
R064	1-247-831-00	CARBON	1K 5% 1/6W	R130	1-247-838-00	CARBON	2K 5% 1/6W
R066	1-247-831-00	CARBON	1K 5% 1/6W	R131	1-247-855-00	CARBON	10K 5% 1/6W
R067	1-247-886-00	CARBON	200K 5% 1/6W	R132	1-247-855-00	CARBON	10K 5% 1/6W
R068	1-247-839-00	CARBON	2.2K 5% 1/6W	R133	1-247-843-00	CARBON	3.3K 5% 1/6W
R069	1-247-831-00	CARBON	1K 5% 1/6W	R134	1-247-855-00	CARBON	10K 5% 1/6W
R070	1-247-831-00	CARBON	1K 5% 1/6W	R135	1-247-843-00	CARBON	3.3K 5% 1/6W
R071	1-247-858-00	CARBON	13K 5% 1/6W	R136	1-247-855-00	CARBON	10K 5% 1/6W
R072	1-247-879-00	CARBON	100K 5% 1/6W	R137	1-247-855-00	CARBON	10K 5% 1/6W
R073	1-247-862-00	CARBON	20K 5% 1/6W	R138	1-247-855-00	CARBON	10K 5% 1/6W
R074	1-247-863-00	CARBON	22K 5% 1/6W	R139	1-247-823-00	CARBON	470 5% 1/6W
R075	1-247-842-00	CARBON	3K 5% 1/6W	R140	1-247-823-00	CARBON	470 5% 1/6W
R076	1-247-871-00	CARBON	47K 5% 1/6W	R141	1-247-859-00	CARBON	15K 5% 1/6W
R077	1-247-839-00	CARBON	2.2K 5% 1/6W	R142	1-247-864-00	CARBON	24K 5% 1/6W
R078	1-247-839-00	CARBON	2.2K 5% 1/6W	R143	1-247-831-00	CARBON	1K 5% 1/6W
R079	1-247-839-00	CARBON	2.2K 5% 1/6W	R144	1-247-826-00	CARBON	620 5% 1/6W
R080	1-247-864-00	CARBON	24K 5% 1/6W	R145	1-247-838-00	CARBON	2K 5% 1/6W
R081	1-247-831-00	CARBON	1K 5% 1/6W	R146	1-247-844-00	CARBON	3.6K 5% 1/6W
R082	1-247-831-00	CARBON	1K 5% 1/6W	R147	1-247-824-00	CARBON	510 5% 1/6W
R083	1-247-847-00	CARBON	4.7K 5% 1/6W	R148	1-247-824-00	CARBON	510 5% 1/6W
R084	1-247-855-00	CARBON	10K 5% 1/6W	R149	1-247-824-00	CARBON	510 5% 1/6W
R085	1-247-867-00	CARBON	33K 5% 1/6W	R150	1-247-824-00	CARBON	510 5% 1/6W
R086	1-247-823-00	CARBON	470 5% 1/6W	R151	1-247-855-00	CARBON	10K 5% 1/6W
R087	1-247-838-00	CARBON	2K 5% 1/6W	R152	1-247-855-00	CARBON	10K 5% 1/6W
R088	1-247-875-00	CARBON	68K 5% 1/6W	R153	1-247-831-00	CARBON	1K 5% 1/6W
R099	1-247-831-00	CARBON	1K 5% 1/6W	R154	1-247-855-00	CARBON	10K 5% 1/6W
R100	1-247-855-00	CARBON	10K 5% 1/6W	R155	1-247-855-00	CARBON	10K 5% 1/6W
R101	1-247-866-00	CARBON	30K 5% 1/6W	R156	1-247-824-00	CARBON	510 5% 1/6W
R102	1-247-835-00	CARBON	1.5K 5% 1/6W	R157	1-247-824-00	CARBON	510 5% 1/6W
R103	1-247-839-00	CARBON	2.2K 5% 1/6W	R158	1-247-815-00	CARBON	220 5% 1/6W
R104	1-247-807-00	CARBON	100 5% 1/6W	R159	1-247-848-00	CARBON	5.1K 5% 1/6W

When indicating parts by reference number, please include the board name.

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
R160	1-247-871-00	CARBON	47K 5% 1/6W	R214	1-247-863-00	CARBON	22K 5% 1/6W
R161	1-247-855-00	CARBON	10K 5% 1/6W	R215	1-247-857-00	CARBON	12K 5% 1/6W
R162	1-247-841-00	CARBON	2.7K 5% 1/6W	R216	1-247-858-00	CARBON	13K 5% 1/6W
R163	1-247-850-00	CARBON	6.2K 5% 1/6W	R217	1-247-855-00	CARBON	10K 5% 1/6W
R164	1-247-848-00	CARBON	5.1K 5% 1/6W	R218	1-247-841-00	CARBON	2.7K 5% 1/6W
R165	1-247-841-00	CARBON	2.7K 5% 1/6W	R219	1-247-863-00	CARBON	22K 5% 1/6W
R166	1-247-875-00	CARBON	68K 5% 1/6W	R220	1-247-855-00	CARBON	10K 5% 1/6W
R167	1-247-859-00	CARBON	15K 5% 1/6W	R221	1-247-855-00	CARBON	10K 5% 1/6W
R168	1-247-831-00	CARBON	1K 5% 1/6W	R222	1-247-855-00	CARBON	10K 5% 1/6W
R169	1-247-839-00	CARBON	2.2K 5% 1/6W	R223	1-247-831-00	CARBON	1K 5% 1/6W
R170	1-247-882-00	CARBON	130K 5% 1/6W	R224	1-247-831-00	CARBON	1K 5% 1/6W
R171	1-247-879-00	CARBON	100K 5% 1/6W	R225	1-247-839-00	CARBON	2.2K 5% 1/6W
R172	1-247-895-00	CARBON	470K 5% 1/6W	R227	1-247-803-00	CARBON	68 5% 1/6W
R173	1-247-857-00	CARBON	12K 5% 1/6W	R236	1-247-871-00	CARBON	47K 5% 1/6W
R174	1-247-838-00	CARBON	2K 5% 1/6W	R240	1-247-804-00	CARBON	75 5% 1/6W
R175	1-247-869-00	CARBON	39K 5% 1/6W	R258	1-247-844-00	CARBON	3.6K 5% 1/6W
R176	1-247-878-00	CARBON	91K 5% 1/6W	R259	1-247-863-00	CARBON	22K 5% 1/6W
R177	1-247-847-00	CARBON	4.7K 5% 1/6W	R264	1-247-863-00	CARBON	22K 5% 1/6W
R178	1-247-859-00	CARBON	15K 5% 1/6W	R265	1-247-879-00	CARBON	100K 5% 1/6W
R179	1-247-855-00	CARBON	10K 5% 1/6W	R266	1-247-818-00	CARBON	300 5% 1/6W
R180	1-247-879-00	CARBON	100K 5% 1/6W	R267	1-247-838-00	CARBON	2K 5% 1/6W
R181	1-247-875-00	CARBON	68K 5% 1/6W	R270	1-247-839-00	CARBON	2.2K 5% 1/6W
R182	1-247-855-00	CARBON	10K 5% 1/6W	R271	1-212-849-00	FUSIBLE	4.7 5% 1/4W F
R183	1-247-867-00	CARBON	33K 5% 1/6W	R272	1-247-803-00	CARBON	68 5% 1/6W
R184	1-247-828-00	CARBON	750 5% 1/6W	R273	1-247-875-00	CARBON	68K 5% 1/6W
R185	1-247-831-00	CARBON	1K 5% 1/6W	R276	1-247-871-00	CARBON	47K 5% 1/6W
R186	1-247-830-00	CARBON	910 5% 1/6W	R278	1-247-855-00	CARBON	10K 5% 1/6W
R187	1-247-853-00	CARBON	8.2K 5% 1/6W	R280	1-247-867-00	CARBON	33K 5% 1/6W
R188	1-247-855-00	CARBON	10K 5% 1/6W	R281	1-247-807-00	CARBON	100 5% 1/6W
R189	1-247-858-00	CARBON	13K 5% 1/6W	R282	1-247-847-00	CARBON	4.7K 5% 1/6W
R190	1-247-875-00	CARBON	68K 5% 1/6W	R304	1-247-831-00	CARBON	1K 5% 1/6W
R191	1-247-882-00	CARBON	130K 5% 1/6W	R311	1-247-843-00	CARBON	3.3K 5% 1/6W
R192	1-247-887-00	CARBON	220K 5% 1/6W	R312	1-247-846-00	CARBON	4.3K 5% 1/6W
R193	1-247-831-00	CARBON	1K 5% 1/6W	R315	1-247-855-00	CARBON	10K 5% 1/6W
R194	1-247-831-00	CARBON	1K 5% 1/6W	R316	1-247-900-00	CARBON	750K 5% 1/6W
R195	1-247-830-00	CARBON	910 5% 1/6W	VARIABLE RESISTOR			
R196	1-247-837-00	CARBON	1.8K 5% 1/6W	RV001	1-228-749-00	RES, ADJ, CARBON 22K	
R197	1-247-822-00	CARBON	430 5% 1/6W	RV002	1-228-746-00	RES, ADJ, CARBON 2.2K	
R198	1-247-855-00	CARBON	10K 5% 1/6W	RV003	1-228-744-00	RES, ADJ, CARBON 470	
R199	1-247-838-00	CARBON	2K 5% 1/6W	RV004	1-228-995-00	RES, ADJ, METAL GLAZE 22K	
R200	1-247-873-00	CARBON	56K 5% 1/6W	RV005	1-228-748-00	RES, ADJ, CARBON 10K	
R201	1-247-873-00	CARBON	56K 5% 1/6W	RV006	1-228-995-00	RES, ADJ, METAL GLAZE 22K	
R202	1-247-879-00	CARBON	100K 5% 1/6W	RV008	1-228-993-00	RES, ADJ, METAL GLAZE 4.7K	
R203	1-247-879-00	CARBON	100K 5% 1/6W	RV009	1-228-750-00	RES, ADJ, CARBON 47K	
R204	1-247-855-00	CARBON	10K 5% 1/6W	RV010	1-228-750-00	RES, ADJ, CARBON 47K	
R205	1-247-871-00	CARBON	47K 5% 1/6W	RV011	1-228-750-00	RES, ADJ, CARBON 47K	
R206	1-247-879-00	CARBON	100K 5% 1/6W	RV012	1-228-991-00	RES, ADJ, METAL GLAZE 2.2K	
R207	1-247-855-00	CARBON	10K 5% 1/6W	RV013	1-228-989-00	RES, ADJ, METAL GLAZE 470	
R209	1-247-814-00	CARBON	200 5% 1/6W	TRANSFORMER			
R210	1-247-808-00	CARBON	110 5% 1/6W	T001	1-426-093-00	COIL, REC C BPT	
R211	1-247-833-00	CARBON	1.2K 5% 1/6W				
R212	1-247-863-00	CARBON	22K 5% 1/6W				
R213	1-247-839-00	CARBON	2.2K 5% 1/6W				

The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

YC-25**AM-3**

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
<u>CRYSTAL</u>				<u>TRIMMER</u>			
X001	1-527-345-00	CRYSTAL, OSC 4.43MHZ		CT501	1-141-215-00	CAP, TRIMMER	
*****				<u>DIODE</u>			
▲:A-6713-175-A	AM-3 BOARD, COMPLETE *****			D501	8-719-911-19	DIODE 1SS119	
▲:3-681-180-00	CASE (MAIN), SHIELD, AM			D503	8-719-911-06	DIODE 1SS106	
▲:3-681-182-00	LID, BOTTOM, SHIELD CASE, AM			D506	8-719-911-19	DIODE 1SS119	
▲:3-681-181-00	LID, UPPER, SHIELD CASE, AM			D507	=>8-719-200-02	DIODE 10E-2	
				D508	8-719-812-31	DIODE TLR123	
<u>CAPACITOR</u>				<u>IC</u>			
C501	1-123-356-00	ELECT	10MF 20% 16V	IC501	8-759-800-46	IC LA7046	
C503	1-123-356-00	ELECT	10MF 20% 16V	IC502	8-750-000-74	IC CX20061	
C504	1-123-356-00	ELECT	10MF 20% 16V	<u>COIL</u>			
C505	1-123-330-00	ELECT	22MF 20% 16V	L501	1-407-963-00	MICRO INDUCTOR 15MMH	
C506	1-123-333-00	ELECT	100MF 20% 16V	L502	1-408-221-00	MICRO INDUCTOR 22MMH	
C507	1-123-333-00	ELECT	100MF 20% 16V	L503	1-407-710-00	MICRO INDUCTOR 270UH	
C508	1-123-328-00	ELECT	4.7MF 20% 25V	L504	1-408-221-00	MICRO INDUCTOR 22MMH	
C509	1-123-328-00	ELECT	4.7MF 20% 25V	<u>TRANSISTOR</u>			
C510	1-130-497-00	MYLAR	0.15MF 5% 50V	Q501	8-729-988-12	TRANSISTOR 2SA881	
C511	1-130-486-51	MYLAR	0.018MF 5% 50V	Q502	=>8-729-245-83	TRANSISTOR 2SC2458	
C512	1-123-333-00	ELECT	100MF 20% 16V	Q503	=>8-729-245-83	TRANSISTOR 2SC2458	
C513	1-123-379-00	ELECT	0.47MF 20% 50V	Q504	8-729-967-32	TRANSISTOR 2SC2673	
C514	1-123-330-00	ELECT	22MF 20% 16V	Q505	8-729-194-47	TRANSISTOR 2SC945-P	
C515	1-102-111-00	CERAMIC	270PF 10% 50V	Q506	8-729-194-47	TRANSISTOR 2SC945-P	
C516	1-123-354-00	ELECT	3.3MF 20% 50V	Q507	=>8-729-204-83	TRANSISTOR 2SA1048-GR	
C517	1-130-507-51	MYLAR	0.0018MF 10% 50V	Q508	=>8-729-245-83	TRANSISTOR 2SC2458	
C518	1-123-305-00	ELECT	33MF 20% 10V	Q509	=>8-729-245-83	TRANSISTOR 2SC2458	
C519	1-130-516-51	MYLAR	0.01MF 10% 50V	Q510	=>8-729-245-83	TRANSISTOR 2SC2458	
C520	1-123-354-00	ELECT	3.3MF 20% 50V	Q511	=>8-729-245-83	TRANSISTOR 2SC2458	
C521	1-123-328-00	ELECT	4.7MF 20% 25V	Q512	=>8-729-245-83	TRANSISTOR 2SC2458	
C522	1-123-333-00	ELECT	100MF 20% 16V	<u>RESISTOR</u>			
C524	1-127-468-00	ELECT(SOLID)	0.22MF 5% 16V	R501	1-247-879-00	CARBON 100K 5% 1/6W	
C525	1-130-502-00	MYLAR	680PF 10% 50V	R502	1-247-864-00	CARBON 24K 5% 1/6W	
C526	1-123-332-00	ELECT	47MF 20% 16V	R503	1-247-875-00	CARBON 68K 5% 1/6W	
C527	1-130-479-00	MYLAR	0.0047MF 5% 50V	R504	1-247-875-00	CARBON 68K 5% 1/6W	
C528	1-130-477-00	MYLAR	0.0033MF 5% 50V	R505	1-247-875-00	CARBON 68K 5% 1/6W	
C529	1-129-709-00	FILM	0.0039MF 10% 630V	R506	▲.1-247-660-00	CARBON 82 5% 1/4W F	
C530	1-102-108-00	CERAMIC	150PF 10% 50V	R507	1-247-847-00	CARBON 4.7K 5% 1/6W	
C531	1-123-333-00	ELECT	100MF 20% 16V	R508	1-247-867-00	CARBON 33K 5% 1/6W	
C532	1-123-356-00	ELECT	10MF 20% 16V	R509	1-247-847-00	CARBON 4.7K 5% 1/6W	
C533	1-130-518-51	MYLAR	0.015MF 10% 50V	R510	1-247-855-00	CARBON 10K 5% 1/6W	
C534	1-123-332-00	ELECT	47MF 20% 16V	R511	1-247-839-00	CARBON 2.2K 5% 1/6W	
C535	1-102-111-00	CERAMIC	270PF 10% 50V	R512	1-247-791-00	CARBON 22 5% 1/6W	
C536	1-123-379-00	ELECT	0.47MF 20% 50V	R513	1-247-855-00	CARBON 10K 5% 1/6W	
<u>CONNECTOR</u>				R515	1-247-849-00	CARBON 5.6K 5% 1/6W	
CN501▲	1-560-894-00	PIN, CONNECTOR 6P		R516	1-247-819-00	CARBON 330 5% 1/6W	
CN502▲	1-560-895-00	PIN, CONNECTOR 7P		R517	1-210-825-00	SOLID 3.3M 5% 1/4W	
CN504▲	1-564-030-00	PIN, CONNECTOR 5P		R518	1-247-851-00	CARBON 6.8K 5% 1/6W	
CN505▲	1-560-890-00	PIN, CONNECTOR 2P					

The components identified by shading and mark ▲ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

AM-3

VS-1

SS-16

Ref.No.	Part No.	Description	Remark
R519	1-247-859-00	CARBON	15K 5% 1/6W
R520	1-247-819-00	CARBON	330 5% 1/6W
R521	1-247-891-00	CARBON	330K 5% 1/6W
R522	1-247-883-00	CARBON	150K 5% 1/6W
R524	1-247-783-00	CARBON	10 5% 1/6W
R525	1-247-843-00	CARBON	3.3K 5% 1/6W
R526	1-247-863-00	CARBON	22K 5% 1/6W
R527	1-247-879-00	CARBON	100K 5% 1/6W
R528	1-247-853-00	CARBON	8.2K 5% 1/6W
R529	1-247-855-00	CARBON	10K 5% 1/6W
R530	1-247-849-00	CARBON	5.6K 5% 1/6W
R531	1-247-829-00	CARBON	820 5% 1/6W
R532	1-247-862-00	CARBON	20K 5% 1/6W
R533	1-246-980-00	CARBON	3.3 5% 1/8W F
R534	1-247-839-00	CARBON	2.2K 5% 1/6W
R535	1-247-839-00	CARBON	2.2K 5% 1/6W
R536	1-247-849-00	CARBON	5.6K 5% 1/6W
R537	1-247-855-00	CARBON	10K 5% 1/6W
R538	1-247-863-00	CARBON	22K 5% 1/6W
R539	1-247-831-00	CARBON	1K 5% 1/6W
R540	1-247-838-00	CARBON	2K 5% 1/6W
R541	1-247-877-00	CARBON	82K 5% 1/6W
R542	1-247-865-00	CARBON	27K 5% 1/6W
R543	1-247-871-00	CARBON	47K 5% 1/6W
R544	1-247-875-00	CARBON	68K 5% 1/6W
R545	1-247-871-00	CARBON	47K 5% 1/6W
R546	1-247-841-00	CARBON	2.7K 5% 1/6W
R547	1-247-863-00	CARBON	22K 5% 1/6W
R548	1-247-843-00	CARBON	3.3K 5% 1/6W
R549	1-247-863-00	CARBON	22K 5% 1/6W
R550	1-247-875-00	CARBON	68K 5% 1/6W
R551	1-247-855-00	CARBON	10K 5% 1/6W
R552	1-247-783-00	CARBON	10 5% 1/6W

VARIABLE RESISTOR

RV501	1-228-748-00	RES, ADJ, CARBON 10K
RV502	1-228-744-00	RES, ADJ, CARBON 470
RV503	1-228-751-00	RES, ADJ, CARBON 100K

TRANSFORMER

T501	1-433-237-00	TRANSFORMER, OSCILLATOR
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▲: 1-611-175-00 VS-1 BOARD

CAPACITOR

C001	1-161-013-00	CERAMIC	0.01MF	10%	25V
C002	1-161-013-00	CERAMIC	0.01MF	10%	25V
C003	1-161-013-00	CERAMIC	0.01MF	10%	25V
C004	1-161-013-00	CERAMIC	0.01MF	10%	25V
C005	1-123-351-00	ELECT	0.47MF	20%	50V
C006	1-161-013-00	CERAMIC	0.01MF	10%	25V
C007	1-161-494-00	CERAMIC	0.022MF	30%	25V
C008	1-161-013-00	CERAMIC	0.01MF	10%	25V

Ref.No. Part No. Description Remark

CONNECTOR

CN001	▲: 1-560-891-00	PIN, CONNECTOR 3P
CN003	▲: 1-560-891-00	PIN, CONNECTOR 3P
CN005	▲: 1-560-894-00	PIN, CONNECTOR 6P

DIODE

D001	8-719-911-19	DIODE 1SS119
D002	8-719-911-19	DIODE 1SS119
D003	8-719-911-19	DIODE 1SS119

TRANSISTOR

Q001	=>8-729-245-83	TRANSISTOR 2SC2458
Q002	=>8-729-245-83	TRANSISTOR 2SC2458
Q003	8-729-900-69	TRANSISTOR DTA144WS
Q004	8-729-900-69	TRANSISTOR DTA144WS
Q005	8-729-900-69	TRANSISTOR DTA144WS
Q006	8-729-900-89	TRANSISTOR DTC144ES

RESISTOR

R001	1-247-895-00	CARBON	470K	5%	1/6W
R002	1-247-895-00	CARBON	470K	5%	1/6W
R003	1-247-813-00	CARBON	180	5%	1/6W
R004	1-247-855-00	CARBON	10K	5%	1/6W
R005	1-247-879-00	CARBON	100K	5%	1/6W
R006	1-247-879-00	CARBON	100K	5%	1/6W
R007	1-247-879-00	CARBON	100K	5%	1/6W
R008	1-247-855-00	CARBON	10K	5%	1/6W
R009	1-247-879-00	CARBON	100K	5%	1/6W
R010	1-247-855-00	CARBON	10K	5%	1/6W
R011	1-247-824-00	CARBON	510	5%	1/6W
R012	1-247-855-00	CARBON	10K	5%	1/6W

▲: A-6715-187-A SS-16 BOARD, COMPLETE

▲: 3-681-170-00 HEAT SINK, S
7-621-770-87 SCREW +B 2.6X5

CAPACITOR

C301	1-123-330-00	ELECT	22MF	20%	16V
C302	1-130-516-51	MYLAR	0.01MF	10%	50V
C303	1-130-516-51	MYLAR	0.01MF	10%	50V

The components identified by shading and mark ▲ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

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Ref.No.	Part No.	Description			Remark	Ref.No.	Part No.	Description			Remark
C304	1-123-354-00	ELECT	3.3MF	20%	50V	C361	1-123-333-00	ELECT	100MF	20%	16V
C305	1-161-021-00	CERAMIC	0.047 MF	10%	25V	C362	1-161-021-00	CERAMIC	0.047 MF	10%	25V
C306	1-123-354-00	ELECT	3.3MF	20%	50V	C363	1-123-332-00	ELECT	47MF	20%	16V
C307	1-161-021-00	CERAMIC	0.047 MF	10%	25V	C601	1-161-021-00	CERAMIC	0.047 MF	10%	25V
C308	1-123-354-00	ELECT	3.3MF	20%	50V	C602	1-161-013-00	CERAMIC	0.01MF	10%	25V
C309	1-161-021-00	CERAMIC	0.047 MF	10%	25V	C603	1-129-794-00	FILM	0.0033MF	5%	100V
C310	1-130-516-51	MYLAR	0.01MF	10%	50V	C604	1-161-013-00	CERAMIC	0.01MF	10%	25V
C311	1-123-296-00	ELECT	220MF	20%	6.3V	C605	1-161-013-00	CERAMIC	0.01MF	10%	25V
C312	1-123-328-00	ELECT	4.7MF	20%	25V	C606	1-123-380-00	ELECT	1MF	20%	50V
C313	1-161-013-00	CERAMIC	0.01MF	10%	25V	C607	1-123-380-00	ELECT	1MF	20%	50V
C314	1-123-306-00	ELECT	47 MF	20%	10V	C608	1-161-494-00	CERAMIC	0.022MF	30%	25V
C315	1-108-605-00	MYLAR	0.12MF	5%	50V	C609	1-161-013-00	CERAMIC	0.01MF	10%	25V
C316	1-127-468-00	ELECT(SOLID)	0.22MF	5%	16V	C610	1-161-002-00	CERAMIC	0.0012MF	10%	25V
C317	1-123-333-00	ELECT	100MF	20%	16V	C611	1-161-002-00	CERAMIC	0.0012MF	10%	25V
C318	1-130-479-00	MYLAR	0.0047 MF	5%	50V	C612	1-102-517-00	CERAMIC	30PF	5%	50V
C319	1-102-106-00	CERAMIC	100PF	10%	50V	C613	1-102-517-00	CERAMIC	30PF	5%	50V
C320	1-123-381-00	ELECT	2.2MF	20%	50V	C614	1-123-331-00	ELECT	33MF	20%	25V
C321	1-123-296-00	ELECT	220MF	20%	6.3V	C615	1-123-331-00	ELECT	33MF	20%	25V
C322	1-161-021-00	CERAMIC	0.047 MF	10%	25V	C617	1-123-380-00	ELECT	1MF	20%	50V
C323	1-131-357-00	TANTALUM	4.7 MF	20%	25V	C618	1-123-306-00	ELECT	47 MF	20%	10V
C324	1-123-381-00	ELECT	2.2MF	20%	50V	C801	1-161-017-00	CERAMIC	0.022MF	10%	25V
C325	1-131-357-00	TANTALUM	4.7MF	20%	25V	C851	1-123-305-00	ELECT	33MF	20%	10V
C326	1-123-381-00	ELECT	2.2MF	20%	50V	C852	1-102-125-00	CERAMIC	0.0047 MF	10%	50V
C327	1-161-016-00	CERAMIC	0.018MF	10%	25V	C853	1-102-074-00	CERAMIC	0.001MF	10%	50V
C328	1-161-013-00	CERAMIC	0.01MF	10%	25V						
C329	1-123-356-00	ELECT	10MF	20%	16V						
C330	1-161-016-00	CERAMIC	0.018MF	10%	25V						
C331	1-161-016-00	CERAMIC	0.018MF	10%	25V						
C332	1-123-330-00	ELECT	22MF	20%	16V						
C333	1-124-429-00	ELECT	0.68MF	20%	50V						
C334	1-161-021-00	CERAMIC	0.047 MF	10%	25V						
C335	1-161-017-00	CERAMIC	0.022MF	10%	25V						
C336	1-161-002-00	CERAMIC	0.0012MF	10%	25V						
C337	1-161-016-00	CERAMIC	0.018MF	10%	25V						
C338	1-161-013-00	CERAMIC	0.01MF	10%	25V						
C339	1-161-016-00	CERAMIC	0.018MF	10%	25V						
C340	1-161-013-00	CERAMIC	0.01MF	10%	25V						
C341	1-123-354-00	ELECT	3.3MF	20%	50V						
C342	1-161-019-00	CERAMIC	0.033MF	10%	25V						
C343	1-123-330-00	ELECT	22MF	20%	16V						
C344	1-161-019-00	CERAMIC	0.033MF	10%	25V						
C345	1-161-013-00	CERAMIC	0.01MF	10%	25V						
C346	1-161-021-00	CERAMIC	0.047 MF	10%	25V						
C347	1-123-380-00	ELECT	1MF	20%	50V						
C348	1-127-472-00	ELECT(SOLID)	1MF	5%	16V						
C350	1-123-333-00	ELECT	100MF	20%	16V						
C351	1-123-306-00	ELECT	47 MF	20%	10V						
C352	1-161-021-00	CERAMIC	0.047 MF	10%	25V						
C355	1-123-328-00	ELECT	4.7MF	20%	25V						
C356	1-123-380-00	ELECT	1MF	20%	50V						
C357	1-123-333-00	ELECT	100MF	20%	16V						
C358	1-161-021-00	CERAMIC	0.047 MF	10%	25V						
C360	1-123-333-00	ELECT	100MF	20%	16V						

FILTER

CF601 1-527-822-00 OSCILLATOR, CERAMIC

CONNECTOR

CN301: 1-560-892-00 PIN, CONNECTOR 4P
 CN302: 1-560-466-00 PIN, CONNECTOR 3P
 CN303: 1-560-892-00 PIN, CONNECTOR 4P
 CN304: 1-560-892-00 PIN, CONNECTOR 4P
 CN305: 1-560-890-00 PIN, CONNECTOR 2P
 CN306: 1-560-895-00 PIN, CONNECTOR 7P
 CN307: 1-560-890-00 PIN, CONNECTOR 2P
 CN308: 1-560-892-00 PIN, CONNECTOR 4P
 CN309: 1-560-895-00 PIN, CONNECTOR 7P
 CN310: 1-560-891-00 PIN, CONNECTOR 3P
 CN311: 1-560-891-00 PIN, CONNECTOR 3P
 CN312: 1-560-895-00 PIN, CONNECTOR 7P
 CN602: 1-560-899-00 PIN, CONNECTOR 11P
 CN603: 1-560-890-00 PIN, CONNECTOR 2P
 CN604: 1-560-891-00 PIN, CONNECTOR 3P
 CN605: 1-560-890-00 PIN, CONNECTOR 2P
 CN606: 1-560-892-00 PIN, CONNECTOR 4P
 CN607: 1-560-890-00 PIN, CONNECTOR 2P
 CN608: 1-560-892-00 PIN, CONNECTOR 4P
 CN609: 1-560-893-00 PIN, CONNECTOR 5P
 CN610: 1-560-891-00 PIN, CONNECTOR 3P
 CN611: 1-560-891-00 PIN, CONNECTOR 3P
 CN613: 1-560-894-00 PIN, CONNECTOR 6P
 CN614: 1-560-896-00 PIN, CONNECTOR 8P
 CN615: 1-560-895-00 PIN, CONNECTOR 7P

When indicating parts by reference number, please include the board name.

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
<u>DIODE</u>							
D301	8-7 19-100-57	DIODE RD10EB2		Q302	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
D302	8-7 19-000-06	DIODE MC921		Q303	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
D304	8-7 19-911-19	DIODE 1SS119		Q304	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
D306	8-7 19-000-06	DIODE MC921		Q305	=>8-7 29-204-83	TRANSISTOR 2SA1048-GR	
D308	8-7 19-911-19	DIODE 1SS119		Q306	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
D309	8-7 19-911-19	DIODE 1SS119		Q307	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
D311	8-7 19-911-19	DIODE 1SS119		Q309	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
D313	8-7 19-911-19	DIODE 1SS119		Q310	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
D314	8-7 19-911-19	DIODE 1SS119		Q311	=>8-7 29-204-83	TRANSISTOR 2SA1048-GR	
D315	8-7 19-911-19	DIODE 1SS119		Q312	=>8-7 29-177-43	TRANSISTOR 2SD774	
D316	8-7 19-911-19	DIODE 1SS119		Q313	=>8-7 29-204-83	TRANSISTOR 2SA1048-GR	
D317	8-7 19-911-19	DIODE 1SS119		Q314	=>8-7 29-805-13	TRANSISTOR 2SC1475-13	
D325	8-7 19-000-04	DIODE MC911		Q315	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
D326	8-7 19-162-07	DIODE RD6.2E-B		Q316	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
D327	8-7 19-200-02	DIODE 10E-2		Q317	=>8-7 29-204-83	TRANSISTOR 2SA1048-GR	
D328	8-7 19-000-06	DIODE MC921		Q318	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
D335	8-7 19-911-19	DIODE 1SS119		Q319	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
D339	8-7 19-911-19	DIODE 1SS119		Q320	8-7 29-316-16	TRANSISTOR 2SC 1061	
D340	8-7 19-911-19	DIODE 1SS119		Q322	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
D341	8-7 19-812-31	DIODE TLR123		Q324	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
D607	8-7 19-911-19	DIODE 1SS119		Q325	=>8-7 29-204-83	TRANSISTOR 2SA1048-GR	
D608	8-7 19-000-12	DIODE MC931		Q326	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
D610	8-7 19-911-19	DIODE 1SS119		Q327	=>8-7 29-204-83	TRANSISTOR 2SA1048-GR	
D612	8-7 19-911-19	DIODE 1SS119		Q330	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
D613	8-7 19-911-19	DIODE 1SS119		Q331	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
D614	8-7 19-911-19	DIODE 1SS119		Q332	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
D616	8-7 19-911-19	DIODE 1SS119		Q333	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
D617	8-7 19-911-19	DIODE 1SS119		Q334	8-7 29-316-16	TRANSISTOR 2SC 1061	
D851	8-7 19-911-19	DIODE 1SS119		Q335	=>8-7 29-177-32	TRANSISTOR 2SD773	
D852	8-7 19-911-19	DIODE 1SS119		Q336	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
<u>IC</u>				Q337	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
IC301	8-751-941-00	IC CX-194B-0		Q338	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
IC302	8-759-135-80	IC UPC358C		Q339	8-7 29-245-83	TRANSISTOR 2SC 2458	
IC303	8-759-145-58	IC UPC458C		Q340	8-7 29-374-02	TRANSISTOR 2SB740	
IC304	8-759-132-40	IC UPC324C		Q341	8-7 29-374-02	TRANSISTOR 2SB740	
IC305	8-759-240-53	IC TC4053BP		Q342	=>8-7 29-177-43	TRANSISTOR 2SD774	
IC306	8-759-132-40	IC UPC324C		Q343	=>8-7 29-177-43	TRANSISTOR 2SD774	
IC307	8-759-240-53	IC TC4053BP		Q344	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
IC308	8-759-135-80	IC UPC358C		Q345	=>8-7 29-177-43	TRANSISTOR 2SD774	
IC601	8-759-908-37	IC MB88421-113M		Q346	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
<u>COIL</u>				Q347	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
L601	1-408-418-00	MICRO INDUCTOR 56UH		Q348	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
<u>IC LINK</u>				Q349	=>8-7 29-204-83	TRANSISTOR 2SA1048-GR	
PS301A	1-532-637-00	LINK, IC		Q352	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
PS302A	1-532-679-00	LINK, IC		Q354	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
<u>TRANSISTOR</u>				Q355	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
Q301	=>8-7 29-245-83	TRANSISTOR 2SC 2458		Q356	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
				Q357	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
				Q358	=>8-7 29-204-83	TRANSISTOR 2SA1048-GR	
				Q359	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
				Q360	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
				Q362	=>8-7 29-245-83	TRANSISTOR 2SC 2458	
				Q363	=>8-7 29-245-83	TRANSISTOR 2SC 2458	

The components identified by shading and mark **A** are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

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Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
Q364	=>8-7 29-245-83	TRANSISTOR 2SC2458		R309	1-247-855-00	CARBON 10K 5%	1/6W
Q365	=>8-7 29-245-83	TRANSISTOR 2SC2458		R310	1-247-859-00	CARBON 15K 5%	1/6W
Q366	=>8-7 29-204-83	TRANSISTOR 2SA1048-GR		R312	1-247-831-00	CARBON 1K 5%	1/6W
Q367	=>8-7 29-245-83	TRANSISTOR 2SC2458		R313	1-247-879-00	CARBON 100K 5%	1/6W
Q368	=>8-7 29-245-83	TRANSISTOR 2SC2458		R314	1-247-871-00	CARBON 47K 5%	1/6W
Q370	=>8-7 29-245-83	TRANSISTOR 2SC2458		R315	1-247-831-00	CARBON 1K 5%	1/6W
Q371	=>8-7 29-245-83	TRANSISTOR 2SC2458		R316	1-247-859-00	CARBON 15K 5%	1/6W
Q372	=>8-7 29-245-83	TRANSISTOR 2SC2458		R317	1-247-871-00	CARBON 47K 5%	1/6W
Q373	=>8-7 29-245-83	TRANSISTOR 2SC2458		R318	1-247-831-00	CARBON 1K 5%	1/6W
Q604	=>8-7 29-245-83	TRANSISTOR 2SC2458		R319	1-247-859-00	CARBON 15K 5%	1/6W
Q605	=>8-7 29-245-83	TRANSISTOR 2SC2458		R320	1-247-871-00	CARBON 47K 5%	1/6W
Q606	=>8-7 29-245-83	TRANSISTOR 2SC2458		R321	△ 1-212-850-00	FUSIBLE 5.1 5%	1/4W F
Q607	=>8-7 29-245-83	TRANSISTOR 2SC2458		R322	1-247-865-00	CARBON 27K 5%	1/6W
Q608	=>8-7 29-204-83	TRANSISTOR 2SA1048-GR		R323	1-247-855-00	CARBON 10K 5%	1/6W
Q609	=>8-7 29-245-83	TRANSISTOR 2SC2458		R324	1-247-855-00	CARBON 10K 5%	1/6W
Q610	=>8-7 29-245-83	TRANSISTOR 2SC2458		R325	1-247-855-00	CARBON 10K 5%	1/6W
Q611	=>8-7 29-245-83	TRANSISTOR 2SC2458		R326	1-247-829-00	CARBON 820 5%	1/6W
Q612	=>8-7 29-245-83	TRANSISTOR 2SC2458		R327	1-247-839-00	CARBON 2.2K 5%	1/6W
Q613	=>8-7 29-245-83	TRANSISTOR 2SC2458		R328	1-247-835-00	CARBON 1.5K 5%	1/6W
Q614	=>8-7 29-245-83	TRANSISTOR 2SC2458		R329	1-247-863-00	CARBON 22K 5%	1/6W
Q615	=>8-7 29-177-43	TRANSISTOR 2SD774		R331	1-247-849-00	CARBON 5.6K 5%	1/6W
Q616	8-7 29-116-42	TRANSISTOR 2SD1164		R332	1-247-819-00	CARBON 330 5%	1/6W
Q617	=>8-7 29-245-83	TRANSISTOR 2SC2458		R333	1-247-891-00	CARBON 330K 5%	1/6W
Q618	=>8-7 29-245-83	TRANSISTOR 2SC2458		R334	1-247-859-00	CARBON 15K 5%	1/6W
Q619	=>8-7 29-177-43	TRANSISTOR 2SD774		R335	1-247-849-00	CARBON 5.6K 5%	1/6W
Q620	8-7 29-116-42	TRANSISTOR 2SD1164		R336	1-247-891-00	CARBON 330K 5%	1/6W
Q621	=>8-7 29-245-83	TRANSISTOR 2SC2458		R338	1-247-855-00	CARBON 10K 5%	1/6W
Q622	=>8-7 29-245-83	TRANSISTOR 2SC2458		R339	1-247-831-00	CARBON 1K 5%	1/6W
Q623	=>8-7 29-245-83	TRANSISTOR 2SC2458		R340	1-247-903-00	CARBON 1M 5%	1/6W
Q624	=>8-7 29-245-83	TRANSISTOR 2SC2458		R341	1-247-855-00	CARBON 10K 5%	1/6W
Q625	=>8-7 29-245-83	TRANSISTOR 2SC2458		R342	1-247-831-00	CARBON 1K 5%	1/6W
Q626	8-7 29-987-42	TRANSISTOR 2SA874		R343	1-247-903-00	CARBON 1M 5%	1/6W
Q627	=>8-7 29-204-83	TRANSISTOR 2SA1048-GR		R344	1-247-871-00	CARBON 47K 5%	1/6W
Q628	=>8-7 29-204-83	TRANSISTOR 2SA1048-GR		R345	1-247-887-00	CARBON 220K 5%	1/6W
Q629	=>8-7 29-204-83	TRANSISTOR 2SA1048-GR		R346	1-247-887-00	CARBON 220K 5%	1/6W
Q630	=>8-7 29-204-83	TRANSISTOR 2SA1048-GR		R347	1-247-865-00	CARBON 27K 5%	1/6W
Q631	=>8-7 29-204-83	TRANSISTOR 2SA1048-GR		R348	1-247-865-00	CARBON 27K 5%	1/6W
Q632	=>8-7 29-204-83	TRANSISTOR 2SA1048-GR		R349	1-247-848-00	CARBON 5.1K 5%	1/6W
Q633	=>8-7 29-245-83	TRANSISTOR 2SC2458		R350	1-247-867-00	CARBON 33K 5%	1/6W
Q634	=>8-7 29-245-83	TRANSISTOR 2SC2458		R351	1-247-867-00	CARBON 33K 5%	1/6W
Q636	=>8-7 29-245-83	TRANSISTOR 2SC2458		R352	1-247-855-00	CARBON 10K 5%	1/6W
Q851	=>8-7 29-245-83	TRANSISTOR 2SC2458		R353	1-247-856-00	CARBON 11K 5%	1/6W
Q852	=>8-7 29-245-83	TRANSISTOR 2SC2458		R359	1-247-871-00	CARBON 47K 5%	1/6W
RESISTOR				R360	1-247-871-00	CARBON 47K 5%	1/6W
R301	△ 1-212-855-00	FUSIBLE 8.2 5%	1/4W F	R361	1-247-859-00	CARBON 15K 5%	1/6W
R302	1-247-821-00	CARBON 390 5%	1/6W	R362	1-247-872-00	CARBON 51K 5%	1/6W
R303	1-206-482-00	METAL OXIDE 62 5%	2W F	R363	1-247-847-00	CARBON 4.7K 5%	1/6W
R304	1-247-863-00	CARBON 22K 5%	1/6W	R364	1-247-900-00	CARBON 750K 5%	1/6W
R305	1-247-863-00	CARBON 22K 5%	1/6W	R365	1-247-847-00	CARBON 4.7K 5%	1/6W
R306	1-247-855-00	CARBON 10K 5%	1/6W	R367	1-247-871-00	CARBON 47K 5%	1/6W
R307	1-247-871-00	CARBON 47K 5%	1/6W	R368	1-247-833-00	CARBON 1.2K 5%	1/6W
R308	1-247-866-00	CARBON 30K 5%	1/6W	R369	1-247-838-00	CARBON 2K 5%	1/6W
				R370	1-247-847-00	CARBON 4.7K 5%	1/6W

The components identified by shading and mark △ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
R371	△.1-212-360-00	METAL OXIDE	1 5% 1W F	R429	1-247-849-00	CARBON	5.6K 5% 1/6W
R372	△.1-212-849-00	FUSIBLE	4.7 5% 1/4W F	R430	1-247-831-00	CARBON	1K 5% 1/6W
R373	1-247-883-00	CARBON	150K 5% 1/6W	R431	△.1-212-360-00	METAL OXIDE	1 5% 1W F
R374	1-247-883-00	CARBON	150K 5% 1/6W	R432	1-247-849-00	CARBON	5.6K 5% 1/6W
R375	1-247-847-00	CARBON	4.7K 5% 1/6W	R433	1-247-831-00	CARBON	1K 5% 1/6W
R376	1-247-857-00	CARBON	12K 5% 1/6W	R434	1-244-865-00	CARBON	470 5% 1/2W
R377	1-247-867-00	CARBON	33K 5% 1/6W	R435	1-247-863-00	CARBON	22K 5% 1/6W
R378	1-247-855-00	CARBON	10K 5% 1/6W	R436	1-247-863-00	CARBON	22K 5% 1/6W
R379	1-247-887-00	CARBON	220K 5% 1/6W	R437	1-247-871-00	CARBON	47K 5% 1/6W
R380	1-247-879-00	CARBON	100K 5% 1/6W	R438	1-247-855-00	CARBON	10K 5% 1/6W
R381	1-247-879-00	CARBON	100K 5% 1/6W	R439	1-247-903-00	CARBON	1M 5% 1/6W
R382	1-247-867-00	CARBON	33K 5% 1/6W	R440	1-247-855-00	CARBON	10K 5% 1/6W
R383	1-247-879-00	CARBON	100K 5% 1/6W	R441	1-247-903-00	CARBON	1M 5% 1/6W
R384	1-247-879-00	CARBON	100K 5% 1/6W	R442	1-247-871-00	CARBON	47K 5% 1/6W
R385	1-247-883-00	CARBON	150K 5% 1/6W	R443	1-247-855-00	CARBON	10K 5% 1/6W
R386	1-247-883-00	CARBON	150K 5% 1/6W	R444	1-247-871-00	CARBON	47K 5% 1/6W
R387	1-247-871-00	CARBON	47K 5% 1/6W	R448	1-247-873-00	CARBON	56K 5% 1/6W
R388	1-247-867-00	CARBON	33K 5% 1/6W	R449	1-247-897-00	CARBON	560K 5% 1/6W
R389	1-247-867-00	CARBON	33K 5% 1/6W	R451	1-247-871-00	CARBON	47K 5% 1/6W
R390	1-247-868-00	CARBON	36K 5% 1/6W	R454	1-247-857-00	CARBON	12K 5% 1/6W
R391	1-247-866-00	CARBON	30K 5% 1/6W	R455	1-247-845-00	CARBON	3.9K 5% 1/6W
R392	1-247-832-00	CARBON	1.1K 5% 1/6W	R456	1-247-871-00	CARBON	47K 5% 1/6W
R393	1-247-857-00	CARBON	12K 5% 1/6W	R457	△.1-246-981-00	CARBON	4.7 5% 1/8W F
R394	1-247-897-00	CARBON	560K 5% 1/6W	R458	1-247-825-00	CARBON	560 5% 1/6W
R395	1-247-847-00	CARBON	4.7K 5% 1/6W	R459	1-247-837-00	CARBON	1.8K 5% 1/6W
R396	1-247-867-00	CARBON	33K 5% 1/6W	R460	1-247-843-00	CARBON	3.3K 5% 1/6W
R398	1-247-871-00	CARBON	47K 5% 1/6W	R461	1-247-871-00	CARBON	47K 5% 1/6W
R399	1-247-847-00	CARBON	4.7K 5% 1/6W	R462	1-247-855-00	CARBON	10K 5% 1/6W
R400	1-247-823-00	CARBON	470 5% 1/6W	R466	1-247-871-00	CARBON	47K 5% 1/6W
R401	△.1-212-360-00	METAL OXIDE	1 5% 1W F	R467	1-247-871-00	CARBON	47K 5% 1/6W
R402	△.1-246-981-00	CARBON	4.7 5% 1/8W F	R468	1-247-871-00	CARBON	47K 5% 1/6W
R403	1-247-831-00	CARBON	1K 5% 1/6W	R469	1-247-839-00	CARBON	2.2K 5% 1/6W
R404	1-247-871-00	CARBON	47K 5% 1/6W	R470	1-247-839-00	CARBON	2.2K 5% 1/6W
R405	1-247-855-00	CARBON	10K 5% 1/6W	R473	1-247-855-00	CARBON	10K 5% 1/6W
R406	1-247-871-00	CARBON	47K 5% 1/6W	R474	△.1-212-857-00	FUSIBLE	10 5% 1/4W F
R407	1-247-855-00	CARBON	10K 5% 1/6W	R475	1-247-819-00	CARBON	330 5% 1/6W
R408	1-247-879-00	CARBON	100K 5% 1/6W	R476	1-247-871-00	CARBON	47K 5% 1/6W
R410	1-247-831-00	CARBON	1K 5% 1/6W	R477	1-247-847-00	CARBON	4.7K 5% 1/6W
R413	1-247-859-00	CARBON	15K 5% 1/6W	R478	1-246-469-00	CARBON	680 5% 1/4W
R414	1-247-850-00	CARBON	6.2K 5% 1/6W	R479	1-247-847-00	CARBON	4.7K 5% 1/6W
R415	1-247-863-00	CARBON	22K 5% 1/6W	R480	1-247-795-00	CARBON	33 5% 1/6W
R416	1-247-871-00	CARBON	47K 5% 1/6W	R481	1-247-808-00	CARBON	110 5% 1/6W
R417	1-247-855-00	CARBON	10K 5% 1/6W	R482	1-247-871-00	CARBON	47K 5% 1/6W
R419	1-247-871-00	CARBON	47K 5% 1/6W	R483	1-247-855-00	CARBON	10K 5% 1/6W
R420	△.1-212-366-00	METAL OXIDE	3.3 5% 1W F	R484	1-247-855-00	CARBON	10K 5% 1/6W
R421	1-247-871-00	CARBON	47K 5% 1/6W	R485	1-247-821-00	CARBON	390 5% 1/6W
R422	1-247-871-00	CARBON	47K 5% 1/6W	R492	1-247-853-00	CARBON	8.2K 5% 1/6W
R423	1-247-855-00	CARBON	10K 5% 1/6W	R493	1-247-871-00	CARBON	47K 5% 1/6W
R424	1-247-871-00	CARBON	10K 5% 1/6W	R494	1-247-875-00	CARBON	68K 5% 1/6W
R425	1-247-855-00	CARBON	10K 5% 1/6W	R495	1-247-855-00	CARBON	10K 5% 1/6W
R426	1-247-863-00	CARBON	22K 5% 1/6W	R496	1-247-873-00	CARBON	56K 5% 1/6W
R427	1-247-863-00	CARBON	22K 5% 1/6W	R497	1-247-869-00	CARBON	39K 5% 1/6W
R428	1-244-865-00	CARBON	470 5% 1/2W	R498	1-247-808-00	CARBON	110 5% 1/6W

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Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
R499	1-247-831-00	CARBON	1K 5% 1/6W	R635	1-247-871-00	CARBON	47K 5% 1/6W
R500	1-247-871-00	CARBON	47K 5% 1/6W	R636	1-247-871-00	CARBON	47K 5% 1/6W
R501	1-247-855-00	CARBON	10K 5% 1/6W	R637	1-247-827-00	CARBON	680 5% 1/6W
R502	1-247-855-00	CARBON	10K 5% 1/6W	R638	1-247-831-00	CARBON	1K 5% 1/6W
R503	1-247-831-00	CARBON	1K 5% 1/6W	R639	1-247-831-00	CARBON	1K 5% 1/6W
R504	1-247-871-00	CARBON	47K 5% 1/6W	R640	1-247-831-00	CARBON	1K 5% 1/6W
R505	1-247-855-00	CARBON	10K 5% 1/6W	R641	1-247-831-00	CARBON	1K 5% 1/6W
R506	1-247-863-00	CARBON	22K 5% 1/6W	R642	1-247-871-00	CARBON	47K 5% 1/6W
R507	1-247-871-00	CARBON	47K 5% 1/6W	R643	1-247-871-00	CARBON	47K 5% 1/6W
R508	1-247-871-00	CARBON	47K 5% 1/6W	R644	1-247-855-00	CARBON	10K 5% 1/6W
R509	1-247-871-00	CARBON	47K 5% 1/6W	R645	1-247-871-00	CARBON	47K 5% 1/6W
R511	1-247-863-00	CARBON	22K 5% 1/6W	R647	1-247-871-00	CARBON	47K 5% 1/6W
R512	1-246-467-00	CARBON	560 5% 1/4W	R648	1-247-855-00	CARBON	10K 5% 1/6W
R513	1-246-470-00	CARBON	750 5% 1/4W	R649	1-247-855-00	CARBON	10K 5% 1/6W
R514	1-247-871-00	CARBON	47K 5% 1/6W	R650	1-247-871-00	CARBON	47K 5% 1/6W
R516	1-247-845-00	CARBON	3.9K 5% 1/6W	R652	1-247-871-00	CARBON	47K 5% 1/6W
R518	1-247-863-00	CARBON	22K 5% 1/6W	R653	1-247-855-00	CARBON	10K 5% 1/6W
R519	1-247-855-00	CARBON	10K 5% 1/6W	R654	1-247-855-00	CARBON	10K 5% 1/6W
R520	1-247-871-00	CARBON	47K 5% 1/6W	R655	1-247-871-00	CARBON	47K 5% 1/6W
R521	1-247-879-00	CARBON	100K 5% 1/6W	R656	1-247-863-00	CARBON	22K 5% 1/6W
R522	1-247-857-00	CARBON	12K 5% 1/6W	R657	1-247-855-00	CARBON	10K 5% 1/6W
R523	1-247-855-00	CARBON	10K 5% 1/6W	R658	1-247-871-00	CARBON	47K 5% 1/6W
R524	1-247-842-00	CARBON	3K 5% 1/6W	R659	1-247-865-00	CARBON	27K 5% 1/6W
R525	1-247-855-00	CARBON	10K 5% 1/6W	R660	1-247-863-00	CARBON	22K 5% 1/6W
R527	1-247-863-00	CARBON	22K 5% 1/6W	R661	1-247-809-00	CARBON	120 5% 1/6W
R528	1-247-871-00	CARBON	47K 5% 1/6W	R662	1-247-829-00	CARBON	820 5% 1/6W
R555	1-247-880-00	CARBON	110K 5% 1/6W	R663	1-247-843-00	CARBON	3.3K 5% 1/6W
R557	1-247-871-00	CARBON	47K 5% 1/6W	R664	1-247-849-00	CARBON	5.6K 5% 1/6W
R559	1-247-865-00	CARBON	27K 5% 1/6W	R665	1-247-873-00	CARBON	56K 5% 1/6W
R610	1-247-817-00	CARBON	270 5% 1/6W	R666	1-247-807-00	CARBON	100 5% 1/6W
R611	1-247-831-00	CARBON	1K 5% 1/6W	R667	1-247-855-00	CARBON	10K 5% 1/6W
R612	1-247-871-00	CARBON	47K 5% 1/6W	R672	1-247-831-00	CARBON	1K 5% 1/6W
R613	1-247-886-00	CARBON	200K 5% 1/6W	R673	1-247-831-00	CARBON	1K 5% 1/6W
R614	1-247-841-00	CARBON	2.7K 5% 1/6W	R674	1-247-831-00	CARBON	1K 5% 1/6W
R615	1-247-869-00	CARBON	39K 5% 1/6W	R675	1-247-831-00	CARBON	1K 5% 1/6W
R616	1-247-841-00	CARBON	2.7K 5% 1/6W	R676	1-247-831-00	CARBON	1K 5% 1/6W
R617	1-247-867-00	CARBON	33K 5% 1/6W	R677	1-247-831-00	CARBON	1K 5% 1/6W
R618	1-247-863-00	CARBON	22K 5% 1/6W	R678	1-247-855-00	CARBON	10K 5% 1/6W
R619	1-247-849-00	CARBON	5.6K 5% 1/6W	R679	1-247-871-00	CARBON	47K 5% 1/6W
R620	1-247-879-00	CARBON	100K 5% 1/6W	R681	1-247-831-00	CARBON	1K 5% 1/6W
R621	1-247-815-00	CARBON	220 5% 1/6W	R682	1-247-831-00	CARBON	1K 5% 1/6W
R622	1-247-875-00	CARBON	68K 5% 1/6W	R683	1-247-871-00	CARBON	47K 5% 1/6W
R623	1-247-831-00	CARBON	1K 5% 1/6W	R690	1-247-855-00	CARBON	10K 5% 1/6W
R624	1-247-801-00	CARBON	56 5% 1/6W	R691	1-247-855-00	CARBON	10K 5% 1/6W
R625	1-247-852-00	CARBON	7.5K 5% 1/6W	R692	1-247-855-00	CARBON	10K 5% 1/6W
R627	1-247-847-00	CARBON	4.7K 5% 1/6W	R693	1-247-855-00	CARBON	10K 5% 1/6W
R628	1-247-871-00	CARBON	47K 5% 1/6W	R694	1-247-855-00	CARBON	10K 5% 1/6W
R629	1-247-849-00	CARBON	5.6K 5% 1/6W	R695	1-247-855-00	CARBON	10K 5% 1/6W
R630	1-247-871-00	CARBON	47K 5% 1/6W	R701	1-247-846-00	CARBON	4.3K 5% 1/6W
R631	1-247-895-00	CARBON	470K 5% 1/6W	R702	1-247-855-00	CARBON	10K 5% 1/6W
R632	1-247-875-00	CARBON	68K 5% 1/6W	R704	1-247-839-00	CARBON	2.2K 5% 1/6W
R633	1-247-831-00	CARBON	1K 5% 1/6W	R705	1-247-839-00	CARBON	2.2K 5% 1/6W
R634	1-247-879-00	CARBON	100K 5% 1/6W				

When indicating parts by reference number, please include the board name.

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FU-14

TU-39

Ref.No.	Part No.	Description	Remark
R706	1-247-839-00	CARBON 2.2K 5% 1/6W	
R707	1-247-839-00	CARBON 2.2K 5% 1/6W	
R708	1-247-839-00	CARBON 2.2K 5% 1/6W	
R709	1-247-839-00	CARBON 2.2K 5% 1/6W	
R801	1-247-847-00	CARBON 4.7K 5% 1/6W	
R802	1-247-831-00	CARBON 1K 5% 1/6W	
R803	1-247-839-00	CARBON 2.2K 5% 1/6W	
R804	1-247-871-00	CARBON 47K 5% 1/6W	
R851	1-247-855-00	CARBON 10K 5% 1/6W	
R853	1-247-863-00	CARBON 22K 5% 1/6W	
R854	1-247-855-00	CARBON 10K 5% 1/6W	
R855	1-247-871-00	CARBON 47K 5% 1/6W	
R856	1-247-855-00	CARBON 10K 5% 1/6W	
R857	1-247-871-00	CARBON 47K 5% 1/6W	
R858	1-247-863-00	CARBON 22K 5% 1/6W	
R859	1-247-863-00	CARBON 22K 5% 1/6W	
R860	1-247-865-00	CARBON 27K 5% 1/6W	
R861	1-247-859-00	CARBON 15K 5% 1/6W	

VARIABLE RESISTOR

RV301	1-228-750-00	RES, ADJ, CARBON 47K	
RV302	1-228-750-00	RES, ADJ, CARBON 47K	
RV303	1-224-254-XX	RES, ADJ, METAL GLAZE 47K	
RV304	1-228-750-00	RES, ADJ, CARBON 47K	
RV307	1-228-994-00	RES, ADJ, METAL GLAZE 10K	
RV308	1-228-994-00	RES, ADJ, METAL GLAZE 10K	
RV309	1-228-991-00	RES, ADJ, METAL GLAZE 2.2K	
RV310	1-228-991-00	RES, ADJ, METAL GLAZE 2.2K	

THERMISTOR

TH302	1-800-202-XX	THERMISTOR S-10K	
TH303	1-800-200-00	THERMISTOR S-3K	
TH304	1-800-202-XX	THERMISTOR S-10K	
TH305	1-800-202-XX	THERMISTOR S-10K	

▲:1-610-406-00 FU-14 BOARD

▲:3-674-313-00 COVER, LED
▲:3-674-372-00 HOLDER (A), LED

DIODE

D701	8-719-812-30	DIODE TL0123	
D702	8-719-812-32	DIODE TLY123	
D703	8-719-812-32	DIODE TLY123	
D704	8-719-812-33	DIODE TLG123A	
D705	8-719-812-30	DIODE TL0123	
D706	8-719-812-33	DIODE TLG123A	

RESISTOR

R701	1-247-817-00	CARBON 270 5% 1/6W	
R702	1-247-817-00	CARBON 270 5% 1/6W	
R703	1-247-811-00	CARBON 150 5% 1/6W	
R704	1-247-811-00	CARBON 150 5% 1/6W	

Ref.No. Part No. Description Remark

SWITCH

S701	1-553-997-00	SWITCH, KEY BOARD	
S702	1-553-997-00	SWITCH, KEY BOARD	
S703	1-553-997-00	SWITCH, KEY BOARD	
S704	1-553-997-00	SWITCH, KEY BOARD	
S705	1-553-997-00	SWITCH, KEY BOARD	
S706	1-553-997-00	SWITCH, KEY BOARD	
S707	1-553-997-00	SWITCH, KEY BOARD	

▲:A-6721-193-A TU-39 BOARD, COMPLETE

1-230-134-00 PRESET UNIT, 12CH
▲:3-681-175-00 LID, UPPER, SHIELD CASE, TU
▲:3-681-176-00 LID, BOTTOM, SHIELD CASE, TU
▲:3-681-183-00 CASE (MAIN), SHIELD, TU
▲:4-336-029-00 PLATE, SHIELD

CAPACITOR

C001	1-123-356-00	ELECT 10MF	20%	16V
C002	1-161-032-00	CERAMIC 0.01MF	20%	25V
C003	1-161-032-00	CERAMIC 0.01MF	20%	25V
C004	1-123-356-00	ELECT 10MF	20%	16V
C005	1-161-075-51	CERAMIC 0.068MF	20%	50V
C007	1-102-529-00	CERAMIC 100PF	5%	50V
C008	1-102-527-00	CERAMIC 82PF	5%	50V
C009	1-102-945-00	CERAMIC 8PF	0.5PF	50V
C010	1-102-523-00	CERAMIC 56PF	5%	50V
C011	1-102-529-00	CERAMIC 100PF	5%	50V
C012	1-161-030-00	CERAMIC 0.0047MF	20%	25V
C013	1-102-074-00	CERAMIC 0.001MF	10%	50V
C014	1-102-074-00	CERAMIC 0.001MF	10%	50V
C015	1-161-030-00	CERAMIC 0.0047MF	20%	25V
C016	1-101-004-00	CERAMIC 0.01MF		50V
C017	1-161-030-00	CERAMIC 0.0047MF	20%	25V
C018	1-161-030-00	CERAMIC 0.0047MF	20%	25V
C019	1-161-030-00	CERAMIC 0.0047MF	20%	25V
C020	1-161-030-00	CERAMIC 0.0047MF	20%	25V
C021	1-123-328-00	ELECT 4.7MF	20%	25V
C022	1-161-030-00	CERAMIC 0.0047MF	20%	25V
C023	1-161-030-00	CERAMIC 0.0047MF	20%	25V
C024	1-102-518-00	CERAMIC 33PF	5%	50V
C025	1-102-529-00	CERAMIC 100PF	5%	50V
C026	1-102-941-00	CERAMIC 4PF	0.5PF	50V
C027	1-102-941-00	CERAMIC 4PF	0.5PF	50V
C028	1-102-518-00	CERAMIC 33PF	5%	50V
C029	1-102-528-00	CERAMIC 91PF	5%	50V
C030	1-123-356-00	ELECT 10MF	20%	16V
C031	1-161-030-00	CERAMIC 0.0047MF	20%	25V
C032	1-161-032-00	CERAMIC 0.01MF	20%	25V
C033	1-123-380-00	ELECT 1MF	20%	50V
C034	1-123-318-00	ELECT 33MF	20%	16V

When indicating parts by reference number, please include the board name.

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Ref.No.	Part No.	Description	Remark
C035	1-101-004-00	CERAMIC 0.01MF	50V
C039	1-102-959-00	CERAMIC 22PF	5% 50V
C040	1-102-959-00	CERAMIC 22PF	5% 50V
C041	1-161-032-00	CERAMIC 0.01MF	20% 25V
C042	1-161-032-00	CERAMIC 0.01MF	20% 25V
C044	1-161-030-00	CERAMIC 0.0047MF	20% 25V
C045	1-102-959-00	CERAMIC 22PF	5% 50V
C046	1-101-004-00	CERAMIC 0.01MF	50V
C047	1-123-318-00	ELECT 33MF	20% 16V
C048	1-161-032-00	CERAMIC 0.01MF	20% 25V
C049	1-123-380-00	ELECT 1MF	20% 50V
C050	1-123-356-00	ELECT 10MF	20% 50V
C051	1-123-379-00	ELECT 0.47MF	20% 50V
C052	1-101-004-00	CERAMIC 0.01MF	50V
C053	1-123-356-00	ELECT 10MF	20% 50V
C054	1-131-415-00	ELECT(SOLID) 0.68MF	10% 16V
C055	1-123-356-00	ELECT 10MF	20% 16V
C056	1-123-356-00	ELECT 10MF	20% 16V
C057	1-123-356-00	ELECT 10MF	20% 16V
C058	1-123-356-00	ELECT 10MF	20% 16V
C059	1-123-356-00	ELECT 10MF	20% 16V

DISCRIMINATOR

CD001 1-404-380-00 DISCRIMINATOR, CERAMIC 5.5MHZ

FILTER

CF001 1-527-263-00 CERAMIC FILTER (5.5MHZ)

CONNECTOR

CN001*:1-560-892-00 PIN, CONNECTOR 4P
 CN002*:1-560-894-00 PIN, CONNECTOR 6P
 CN003*:1-560-895-00 PIN, CONNECTOR 7P
 CN004*:1-560-892-00 PIN, CONNECTOR 4P
 CN005*:1-560-893-00 PIN, CONNECTOR 5P

CN006*:1-560-899-00 PIN, CONNECTOR 11P

TRIMMER

CT001 1-404-134-00 TRAP, CERAMIC (5.5MHZ)

DIODE

D001 8-719-911-19 DIODE 1SS119
 D002 8-719-911-19 DIODE 1SS119
 D005 8-719-911-19 DIODE 1SS119
 D006 =>8-719-101-83 DIODE RD12EL2
 D007 8-719-901-33 DIODE 1SS133
 D008 8-719-901-33 DIODE 1SS133
 D009 8-719-901-33 DIODE 1SS133
 D010 8-719-901-33 DIODE 1SS133
 D011 8-719-901-33 DIODE 1SS133
 D012 8-719-901-33 DIODE 1SS133
 D013 8-719-901-33 DIODE 1SS133

Ref.No.	Part No.	Description	Remark
D014	8-719-901-33	DIODE 1SS133	
D015	8-719-901-33	DIODE 1SS133	
D016	8-719-901-33	DIODE 1SS133	
D017	8-719-901-33	DIODE 1SS133	
D018	8-719-901-33	DIODE 1SS133	
D019	8-719-911-19	DIODE 1SS119	
D020	8-719-911-19	DIODE 1SS119	
D021	8-719-911-19	DIODE 1SS119	
D022	8-719-911-19	DIODE 1SS119	
D023	8-719-911-19	DIODE 1SS119	
D024	8-719-911-19	DIODE 1SS119	
D025	8-719-911-19	DIODE 1SS119	
D026	8-719-911-19	DIODE 1SS119	
D027	8-719-911-19	DIODE 1SS119	
D028	8-719-911-19	DIODE 1SS119	
D029	8-719-911-19	DIODE 1SS119	
D030	8-719-911-19	DIODE 1SS119	
D032	8-719-911-19	DIODE 1SS119	
D033	8-719-911-19	DIODE 1SS119	
D034	8-719-911-19	DIODE 1SS119	
D035	8-719-911-19	DIODE 1SS119	
D036	8-719-911-19	DIODE 1SS119	
D037	8-719-911-19	DIODE 1SS119	
D038	8-719-911-19	DIODE 1SS119	
D039	8-719-911-19	DIODE 1SS119	
D040	8-719-911-19	DIODE 1SS119	
D041	8-719-911-19	DIODE 1SS119	
D042	8-719-911-19	DIODE 1SS119	
D043	8-719-911-19	DIODE 1SS119	

IC

IC001 8-759-276-07 IC TA7607AP
 IC002 8-759-193-91 IC UPC1391H
 IC003 8-759-600-44 IC M54836AP
 IC004 8-759-157-40 IC UPC574J

COIL

L001 1-407-681-00 MICRO INDUCTOR 1UH
 L002 1-407-690-00 MICRO INDUCTOR 5.6UH
 L003 1-408-406-00 MICRO INDUCTOR 5.6UH
 L004 1-408-423-00 MICRO INDUCTOR 150UH
 L005 1-408-409-00 MICRO INDUCTOR 10UH
 L007 1-408-412-00 MICRO INDUCTOR 18UH
 L008 1-408-413-00 MICRO INDUCTOR 22UH

TRANSISTOR

Q001 8-765-300-00 TRANSISTOR 2SC2009
 Q002 8-769-200-20 TRANSISTOR 2SK107-2
 Q003 =>8-729-245-83 TRANSISTOR 2SC2458
 Q007 =>8-729-245-83 TRANSISTOR 2SC2458
 Q008 =>8-729-988-12 TRANSISTOR 2SA881
 Q009 =>8-729-117-54 TRANSISTOR 2SA1175
 Q010 =>8-729-117-54 TRANSISTOR 2SA1175

When indicating parts by reference number, please include the board name.

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MT-4

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
Q011	=>8-729-117-54	TRANSISTOR 2SA1175		R059	△ 1-206-670-00	METAL OXIDE 1.8K 5% 2W	F
Q013	=>8-729-245-83	TRANSISTOR 2SC2458		R060	1-247-875-00	CARBON 68K 5% 1/6W	
Q014	8-769-200-20	TRANSISTOR 2SK107-2		R061	1-247-839-00	CARBON 2.2K 5% 1/6W	
Q016	=>8-729-245-83	TRANSISTOR 2SC2458		R062	1-247-831-00	CARBON 1K 5% 1/6W	
Q017	=>8-729-245-83	TRANSISTOR 2SC2458		R063	1-247-881-00	CARBON 120K 5% 1/6W	
Q018	=>8-729-245-83	TRANSISTOR 2SC2458		R064	1-247-863-00	CARBON 22K 5% 1/6W	
Q019	=>8-729-204-83	TRANSISTOR 2SA1048-GR		R065	1-247-863-00	CARBON 22K 5% 1/6W	
<u>RESISTOR</u>				R066	1-247-863-00	CARBON 22K 5% 1/6W	
R001	1-247-871-00	CARBON 47K 5% 1/6W		R067	1-247-863-00	CARBON 22K 5% 1/6W	
R002	1-247-847-00	CARBON 4.7K 5% 1/6W		R068	1-247-863-00	CARBON 22K 5% 1/6W	
R003	1-247-831-00	CARBON 1K 5% 1/6W		R069	1-247-863-00	CARBON 22K 5% 1/6W	
R004	1-247-847-00	CARBON 4.7K 5% 1/6W		R070	1-247-863-00	CARBON 22K 5% 1/6W	
R005	1-247-845-00	CARBON 3.9K 5% 1/6W		R071	1-247-855-00	CARBON 10K 5% 1/6W	
R006	1-247-815-00	CARBON 220 5% 1/6W		R072	1-247-863-00	CARBON 22K 5% 1/6W	
R007	1-247-815-00	CARBON 220 5% 1/6W		R073	△ 1-212-849-00	FUSIBLE 4.7 5% 1/4W	F
R008	1-247-823-00	CARBON 470 5% 1/6W		R074	1-247-871-00	CARBON 47K 5% 1/6W	
R009	1-247-837-00	CARBON 1.8K 5% 1/6W		R076	1-247-863-00	CARBON 22K 5% 1/6W	
R010	1-247-831-00	CARBON 1K 5% 1/6W		R077	1-247-871-00	CARBON 47K 5% 1/6W	
R011	1-247-841-00	CARBON 2.7K 5% 1/6W		R078	1-247-875-00	CARBON 68K 5% 1/6W	
R012	1-247-835-00	CARBON 1.5K 5% 1/6W		R079	1-247-879-00	CARBON 100K 5% 1/6W	
R013	1-247-863-00	CARBON 22K 5% 1/6W		R080	1-247-895-00	CARBON 470K 5% 1/6W	
R014	1-247-877-00	CARBON 82K 5% 1/6W		R081	1-247-855-00	CARBON 10K 5% 1/6W	
R015	1-247-867-00	CARBON 33K 5% 1/6W		R082	1-247-839-00	CARBON 2.2K 5% 1/6W	
R016	1-247-901-00	CARBON 820K 5% 1/6W		<u>VARIABLE RESISTOR</u>			
R017	1-247-831-00	CARBON 1K 5% 1/6W		RV001	1-228-747-00	RES, ADJ, CARBON 4.7K	
R018	1-247-813-00	CARBON 180 5% 1/6W		RV002	1-228-753-00	RES, ADJ, CARBON 470K	
R019	1-247-807-00	CARBON 100 5% 1/6W		<u>SWITCH</u>			
R020	1-247-823-00	CARBON 470 5% 1/6W		S001	1-516-226-00	SLIDE SWITCH	
R021	1-247-820-00	CARBON 360 5% 1/6W		S002	1-554-373-00	SWITCH, LEVER	
R028	1-247-831-00	CARBON 1K 5% 1/6W		<u>FILTER</u>			
R029	1-247-831-00	CARBON 1K 5% 1/6W		SF001	1-404-416-00	SAWF	
R030	1-247-847-00	CARBON 4.7K 5% 1/6W		<u>TRANSFORMER</u>			
R031	1-247-817-00	CARBON 270 5% 1/6W		T001	1-404-068-00	COIL, VIF	
R032	1-247-821-00	CARBON 390 5% 1/6W		T002	1-404-068-00	COIL, VIF	
R035	1-247-841-00	CARBON 2.7K 5% 1/6W		T003	1-404-207-00	COIL, VIF	
R036	1-247-865-00	CARBON 27K 5% 1/6W		T004	1-404-203-00	COIL, VIF	
R039	1-247-879-00	CARBON 100K 5% 1/6W		T005	1-404-203-00	COIL, VIF	
R040	1-247-855-00	CARBON 10K 5% 1/6W		*****			
R041	1-247-855-00	CARBON 10K 5% 1/6W		◆:1-610-400-00	MT-4 BOARD		
R042	1-247-855-00	CARBON 10K 5% 1/6W			*****		
R043	1-247-855-00	CARBON 10K 5% 1/6W		△ 1-463-426-00	TUNER, ET (BT-884)		
R044	1-247-855-00	CARBON 10K 5% 1/6W					
R045	1-247-855-00	CARBON 10K 5% 1/6W					
R049	1-247-855-00	CARBON 10K 5% 1/6W					
R050	1-247-895-00	CARBON 470K 5% 1/6W					
R052	1-247-897-00	CARBON 560K 5% 1/6W					
R053	1-247-883-00	CARBON 150K 5% 1/6W					
R054	1-247-889-00	CARBON 270K 5% 1/6W					
R055	1-247-867-00	CARBON 33K 5% 1/6W					
R056	1-247-871-00	CARBON 47K 5% 1/6W					
R057	1-247-865-00	CARBON 27K 5% 1/6W					
R058	1-247-895-00	CARBON 470K 5% 1/6W					

The components identified by shading and mark △ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

SW-25**CS-3****CS-4****N****LM-8****RD-6****RD-7****PS-23**

Ref.No.	Part No.	Description	Remark	Ref.No.	Part No.	Description	Remark
♣:1-610-410-00	SW-25 BOARD	*****				COIL	
	VARIABLE RESISTOR			L001	1-404-310-00	COIL	
RV611	1-230-122-00	RES, VAR, CARBON 100K		*****			
	SWITCH			♣:1-605-071-00	LM-8 BOARD	*****	
S611	1-554-377-00	SWITCH, SLIDE				CAPACITOR	
S612	1-554-377-00	SWITCH, SLIDE		C101	1-161-057-00	CERAMIC 0.033MF 10% 50V	
*****				C102	1-161-057-00	CERAMIC 0.033MF 10% 50V	
♣:1-609-227-00	CS-3 BOARD	*****				COIL	
	CONNECTOR			L101	1-408-120-00	MICRO INDUCTOR 18UH	
CN301♣:1-564-029-00	PIN, CONNECTOR 4P			L102	1-408-120-00	MICRO INDUCTOR 18UH	
	SWITCH					RESISTOR	
S301	1-554-241-00	SWITCH, LEVER		R101	1-206-479-00	METAL OXIDE 47 5% 2W F	
*****				*****			
♣:1-609-228-00	CS-4 BOARD	*****		♣:1-610-401-00	RD-6 BOARD	*****	
	SWITCH			♣:3-681-157-00	HOLDER, RD		
S302	1-554-241-00	SWITCH, LEVER				DIODE	
*****				D001	8-719-921-03	DIODE GP-2S02B	
♣:1-606-794-00	N BOARD	*****		*****			
	CAPACITOR			♣:1-610-402-00	RD-7 BOARD	*****	
C001	1-123-617-00	ELECT 10MF 20% 16V				DIODE	
C002	1-123-617-00	ELECT 10MF 20% 16V		D001	8-719-921-03	DIODE GP-2S02B	
C003	1-123-617-00	ELECT 10MF 20% 16V		*****			
C004	1-161-019-00	CERAMIC 0.033MF 10% 25V		♣:1-610-409-00	PS-23 BOARD	*****	
C005	1-108-567-00	MYLAR 0.0033MF 5% 50V					
C006	1-123-821-00	ELECT 47MF 20% 16V		1-533-162-00	HOLDER, FUSE		
	COMPOSITION CIRCUIT BLOCK					CAPACITOR	
CP001	1-232-234-00	COMPOSITION CIRCUIT BLOCK		C401	1-130-710-00	FILM 0.1MF 20% 250V	
	DIODE			C406	1-125-298-00	ELECT(BLOCK) 10000MF 20% 25V	
D001	8-719-110-32	DIODE PH302B		C414	1-123-319-00	ELECT 47MF 20% 16V	
	IC			C415	1-123-319-00	ELECT 47MF 20% 16V	
IC001	8-759-113-73	IC UPC1373H					

The components identified by shading and mark **A** are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

PS-23

PS-22

TM-37

Ref.No. Part No. Description Remark

CONNECTOR

CN403 1-560-891-00 PIN, CONNECTOR 3P
 CN405 1-560-890-00 PIN, CONNECTOR 2P
 CN407 1-560-890-00 PIN, CONNECTOR 2P

DIODE

D401 8-719-505-20 DIODE S5VB20

FUSE

F401 1-532-203-00 FUSE, TIME-LAG T2A 250V
 F402 1-532-237-00 FUSE, TIME-LAG T3.15A 250V

IC

IC401 8-749-912-29 IC STR1229

RESISTOR

R411 1-247-823-00 CARBON 470 5% 1/6W

1-A-6728-737-A PS-22 BOARD, COMPLETE

1-533-162-00 HOLDER, FUSE

CAPACITOR

C308 1-123-325-00 ELECT 2200MF 20% 16V
 C309 1-123-377-00 ELECT 470MF 20% 63V
 C311 1-123-375-00 ELECT 220MF 20% 63V
 C316 1-123-330-00 ELECT 22MF 20% 16V
 C319 1-123-330-00 ELECT 22MF 20% 16V
 C320 1-123-330-00 ELECT 22MF 20% 16V

CONNECTOR

CN301 1-560-893-00 PIN, CONNECTOR 5P
 CN302 1-560-892-00 PIN, CONNECTOR 4P
 CN304 1-560-895-00 PIN, CONNECTOR 7P
 CN306 1-560-891-00 PIN, CONNECTOR 3P
 CN308 1-560-894-00 PIN, CONNECTOR 6P

DIODE

D302 8-719-511-20 DIODE S1UB20
 D313 8-719-200-02 DIODE 10E-2
 D315 8-719-200-02 DIODE 10E-2
 D317 8-719-100-41 DIODE RD6.8EB2
 D318 8-719-100-44 DIODE RD7.5EB2

FUSE

F304 1-532-279-00 FUSE, TIME-LAG T500mA 250V
 F306 1-532-279-00 FUSE, TIME-LAG T500mA 250V

Remark

Ref.No. Part No. Description

Remark

TRANSISTOR

Q301 8-729-316-16 TRANSISTOR 2SC1061
 Q302 8-729-178-54 TRANSISTOR 2SC2785
 Q303 8-729-178-54 TRANSISTOR 2SC2785
 Q306 8-729-178-54 TRANSISTOR 2SC2785
 Q307 8-729-316-16 TRANSISTOR 2SC1061
 Q308 8-729-316-16 TRANSISTOR 2SC1061
 Q309 8-729-178-54 TRANSISTOR 2SC2785

RESISTOR

R301 1-247-819-00 CARBON 330 5% 1/6W
 R302 1-247-842-00 CARBON 3K 5% 1/6W
 R303 1-247-862-00 CARBON 20K 5% 1/6W
 R304 1-247-831-00 CARBON 1K 5% 1/6W
 R305 1-247-847-00 CARBON 4.7K 5% 1/6W
 R306 1-247-857-00 CARBON 12K 5% 1/6W
 R308 1-213-144-00 METAL OXIDE 1.2K 5% 1W F
 R310 1-247-855-00 CARBON 10K 5% 1/6W
 R313 1-244-885-00 CARBON 3.3K 5% 1/2W
 R314 1-247-865-00 CARBON 27K 5% 1/2W
 R315 1-247-847-00 CARBON 4.7K 5% 1/6W
 R316 1-247-852-00 CARBON 7.5K 5% 1/6W

1-610-403-00 TM-37 BOARD

CAPACITOR

C001 1-123-354-00 ELECT 3.3MF 20% 50V
 C002 1-125-299-00 47000MF 0
 C004 1-102-959-00 CERAMIC 22PF 5% 50V
 C005 1-123-318-00 ELECT 33MF 20% 16V
 C006 1-123-342-00 ELECT 22MF 20% 35V
 C007 1-161-024-00 CERAMIC 0.082MF 10% 25V
 C008 1-161-772-11 CERAMIC 0.1MF 10% 25V
 C009 1-161-061-00 CERAMIC 0.068MF 10% 50V
 C011 1-161-772-11 CERAMIC 0.1MF 10% 25V

CONNECTOR

CN002 1-560-891-00 PIN, CONNECTOR 3P
 CN004 1-560-895-00 PIN, CONNECTOR 7P
 CN007 1-564-027-00 PIN, CONNECTOR 2P

DIODE

D001 8-719-911-19 DIODE 1SS119
 D002 8-719-191-07 DIODE RD9.1E-B
 D005 8-719-812-31 DIODE TLR123
 D006 8-719-911-19 DIODE 1SS119
 D007 8-719-911-19 DIODE 1SS119
 D008 8-719-911-19 DIODE 1SS119

The components identified by shading and mark Δ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

TM-37**TM-38****TM-39****CH-36**

Ref.No.	Part No.	Description	Remark
D009	8-719-911-19	DIODE 1SS119	
<u>IC</u>			
IC001	8-759-101-63	UPD7519G-033	
<u>TRANSISTOR</u>			
Q005 =>8-729-245-83		TRANSISTOR 2SC2458	
Q006 =>8-729-245-83		TRANSISTOR 2SC2458	
Q007 =>8-729-204-83		TRANSISTOR 2SA1048-GR	
<u>RESISTOR</u>			
R001	1-247-875-00	CARBON 68K 5% 1/6W	
R004	1-247-903-00	CARBON 1M 5% 1/6W	
R006	1-247-831-00	CARBON 1K 5% 1/6W	
R007	1-247-879-00	CARBON 100K 5% 1/6W	
R008	1-247-863-00	CARBON 22K 5% 1/6W	
R009	1-247-867-00	CARBON 33K 5% 1/6W	
R010	1-247-867-00	CARBON 33K 5% 1/6W	
R011	1-247-872-00	CARBON 51K 5% 1/6W	
R012	1-247-843-00	CARBON 3.3K 5% 1/6W	
R013	1-247-879-00	CARBON 100K 5% 1/6W	
R014	1-247-879-00	CARBON 100K 5% 1/6W	
R015	1-247-879-00	CARBON 100K 5% 1/6W	
R016	1-247-879-00	CARBON 100K 5% 1/6W	
R017	1-247-868-00	CARBON 36K 5% 1/6W	
R018	1-247-886-00	CARBON 200K 5% 1/6W	
R019	1-247-874-00	CARBON 62K 5% 1/6W	
R020	1-247-869-00	CARBON 39K 5% 1/6W	
R021	1-247-879-00	CARBON 100K 5% 1/6W	
R022	1-247-855-00	CARBON 10K 5% 1/6W	
R023	1-247-855-00	CARBON 10K 5% 1/6W	
R024	1-247-855-00	CARBON 10K 5% 1/6W	
R025	1-247-855-00	CARBON 10K 5% 1/6W	
R026	1-247-855-00	CARBON 10K 5% 1/6W	
R027	1-247-855-00	CARBON 10K 5% 1/6W	
R028	1-247-855-00	CARBON 10K 5% 1/6W	
R029	1-247-855-00	CARBON 10K 5% 1/6W	
R030	1-247-855-00	CARBON 10K 5% 1/6W	
R032	1-247-855-00	CARBON 10K 5% 1/6W	
<u>TRIMMER</u>			
TC001	1-141-022-11	CAP, TRIMMER, CERAMIC	
<u>CRYSTAL</u>			
X001	1-527-647-00	OSCILLATOR, CRYSTAL	

♣:1-610-404-00 TM-38 BOARD

♣:2-364-740-00 HOLDER, LED

Ref.No.	Part No.	Description	Remark
<u>DIODE</u>			
D101	8-719-911-19	DIODE 1SS119	
D102	8-719-812-31	DIODE TLR123	
D103	8-719-812-31	DIODE TLR123	
D104	8-719-812-30	DIODE TLO123	
<u>INDICATOR TUBE</u>			
FL101	1-519-295-00	INDICATOR TUBE, FLUORESCENT	
<u>RESISTOR</u>			
R101	1-247-819-00	CARBON 330 5% 1/6W	
<u>SWITCH</u>			
S101	1-553-997-00	SWITCH, KEY BOARD	
S102	1-553-997-00	SWITCH, KEY BOARD	
S103	1-553-997-00	SWITCH, KEY BOARD	
S104	1-553-875-00	SWITCH, RUBBER	

♣:1-610-405-00 TM-39 BOARD *****			
<u>SWITCH</u>			
S203	1-553-997-00	SWITCH, KEY BOARD	
S204	1-553-997-00	SWITCH, KEY BOARD	
S205	1-553-997-00	SWITCH, KEY BOARD	
S206	1-553-997-00	SWITCH, KEY BOARD	
S207	1-553-997-00	SWITCH, KEY BOARD	
S208	1-553-997-00	SWITCH, KEY BOARD	
S209	1-553-997-00	SWITCH, KEY BOARD	
S210	1-553-997-00	SWITCH, KEY BOARD	
S211	1-553-997-00	SWITCH, KEY BOARD	

♣:1-610-407-00 CH-36 BOARD *****			
<u>SWITCH</u>			
S501	1-553-997-00	SWITCH, KEY BOARD	
S502	1-553-997-00	SWITCH, KEY BOARD	
S503	1-553-997-00	SWITCH, KEY BOARD	
S504	1-553-997-00	SWITCH, KEY BOARD	
S505	1-553-997-00	SWITCH, KEY BOARD	
S506	1-553-997-00	SWITCH, KEY BOARD	
S507	1-553-997-00	SWITCH, KEY BOARD	
S508	1-553-997-00	SWITCH, KEY BOARD	
S509	1-553-997-00	SWITCH, KEY BOARD	
S510	1-553-997-00	SWITCH, KEY BOARD	
S511	1-553-997-00	SWITCH, KEY BOARD	
S512	1-553-997-00	SWITCH, KEY BOARD	

When indicating parts by reference number, please include the board name.

Ref.No.	Part No.	Description	Remark
---------	----------	-------------	--------

MISCELLANEOUS

	A-6761-060-A	ACE ASSY (AUDIO, AUDIO ERASE, CTL)	
	△ 1-463-426-00	TUNER (BT-884)	
	△ 1-464-291-00	RF MODULATOR (RFU-813)	
	△ 1-551-732-00	CORD, POWER	
	▲ 1-556-934-00	CABLE, PIN	
	8-825-508-10	HEAD, FE	
L901	1-464-249-21	SENSOR, S COIL	
L902	1-464-250-00	SENSOR, T COIL	
M902	8-838-048-00	MOTOR, DC (BHF-1908A) ... (CAPSTAN MOTOR)	
M903	▲ A-4910-021-A	R STATOR BOARD, COMPLETE (REEL MOTOR)	
M904	A-6737-118-A	MOTOR ASSY, L (LOADING MOTOR)	
	1-541-163-32	MOTOR	
PM901	△ 1-454-348-31	SOLENOID, BRAKE PLUNGER	
PM902	△ 1-454-349-00	SOLENOID, PLUNGER (PINCH)	
S901	1-554-374-00	SWITCH, LEVER (REC PROOF)	
S902	1-554-374-21	SWITCH, LEVER (CASSETTE DOWN)	
S903	1-553-539-00	SWITCH, MICRO (LOADING END)	
S904	1-553-718-00	SWITCH, MICRO (UNLOADING END)	
T901	△ 1-447-614-00	TRANSFORMER, POWER	

ACCESSORIES AND PACKING MATERIALS

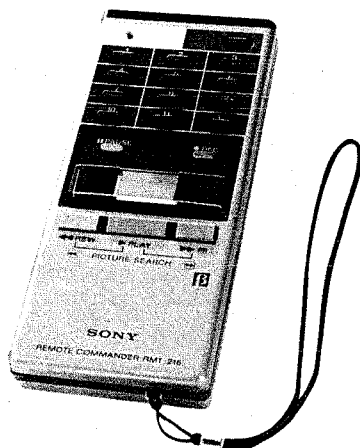
Part No.	Description	Remark
A-6765-177-A	COMMANDER ASSY RMT-216S (SILVER)	
A-6765-286-A	COMMANDER ASSY RMT-216R (RED)	
1-551-513-00	CABLE, COAXIAL ASSY	
1-556-893-00	CORD ASSY, COAXIAL	
3-671-873-00	CASE, ACCESSORY	
3-675-581-00	LID, CASE, ACCESSORY	
3-681-269-01	INDIVIDUAL CARTON (SILVER)	
3-681-269-11	INDIVIDUAL CARTON (RED)	
3-681-190-00	SHEET (LARGE), PROTECTION	
3-681-192-00	CUSHION (UPPER)	
3-681-193-00	CUSHION (LOWER)	
3-773-583-61	MANUAL, INSTRUCTION	

The components identified by shading and mark △ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

RMT-216

SERVICE MANUAL



SPECIFICATIONS

Remote control system	Infrared control
Power requirements	3V dc, 2 IEC designation R6 batteries (size AA)
Dimensions	Approx. 65 × 20 × 153 mm (w/h/d) (2 ⁵ / ₈ × 1 ³ / ₁₆ × 6 ¹ / ₈ inches) incl. projecting parts and controls
Weight	Approx. 140 g (5 oz) incl. batteries

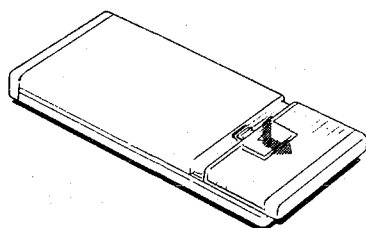
REMOTE CONTROL UNIT
SONY®

1. REMOTE CONTROL OPERATION

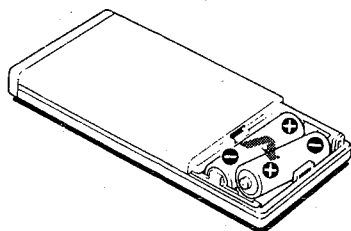
You can control almost all the functions of the this video cassette recorder from your armchair using the supplied remote control unit.

BATTERY INSERTION

1 Open the lid.



2 Insert two IEC designation R6 batteries (size AA) with correct polarity.



3 Close the lid firmly.

Notes on the remote control unit

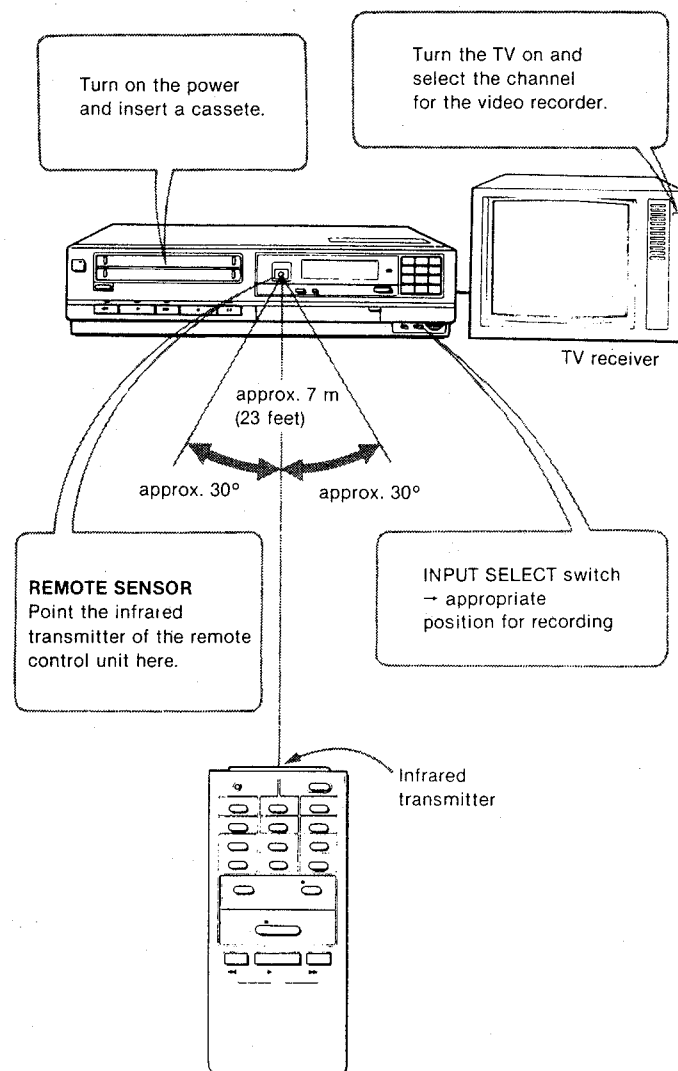
- Avoid dropping foreign objects into the cabinet, particularly when replacing batteries.
- Keep the unit away from extremely hot or humid places.
- Avoid mechanical shock to the unit.
- This remote control unit may be used only with this video cassette recorder.

Battery life

In normal operation, batteries will last for about six months. If the range of the remote control unit becomes noticeably short, replace the batteries with new ones. When the batteries are exhausted, the remote function indicator will not light when the buttons on the control unit are pressed.

If the remote control unit is not to be used for a long period of time, remove the batteries to avoid possible damage from battery leakage.

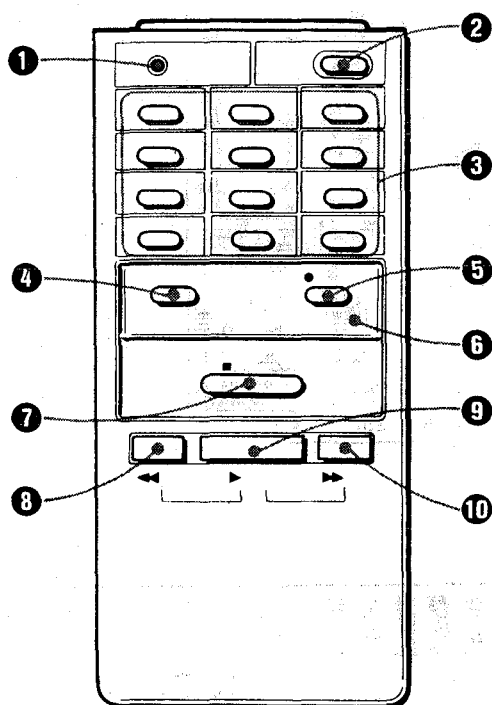
PREPARATION



Notes

- There should be no obstacles between the remote control unit and the remote control detector of the recorder.
- The shorter the distance between the remote control unit and the recorder, the wider the angle within which the recorder can be controlled.

FUNCTION OF THE BUTTONS



9 ► PLAY button

Press to play the tape back.

10 ►► FF button

Press to advance the tape rapidly. Used also for forward picture search operation during playback and for skip scan operation during fast forward mode.

OPERATION

Recording

- 1 Select the channel to be recorded with the programme select button.
- 2 Press the ● REC button. The recording will begin.
To stop recording, press the ■ STOP button.

Playback

Press the ► PLAY button. Playback will begin.
To stop playback, press the ■ STOP button.

1 Remote function indicator

Lights up when any of the buttons on the remote control unit are pressed.

2 ON button

Press to turn the power on. To turn it off, press again.

3 Programme select buttons

Press to select a programme to be viewed or to be recorded.

4 || PAUSE button

Press to stop the tape momentarily. To resume the previous mode, press it again.

5 ● REC button

Press to start recording.

6 Sliding cover

During playback, slide this cover over the record button to prevent accidental recording. During recording, slide this cover down to prevent accidental interruption of recording.

7 ■ STOP button

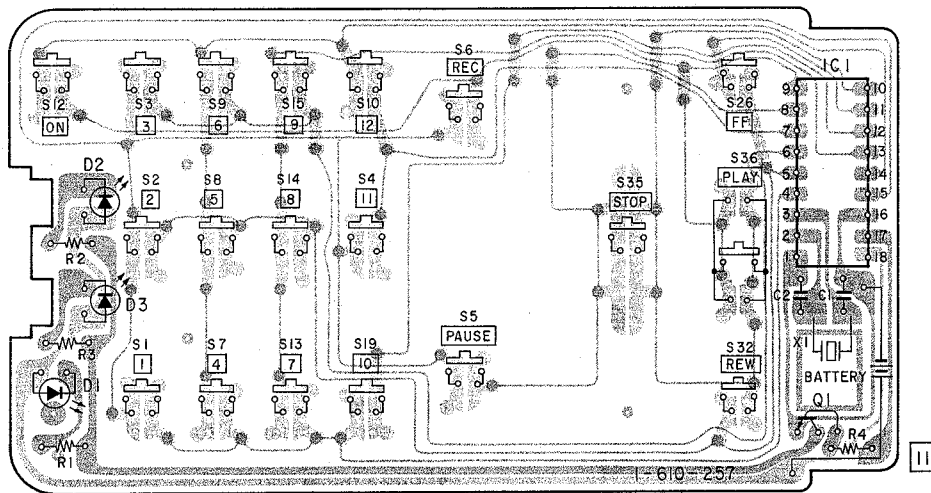
Press to stop the tape.

8 ◀◀ REW button

Press to rewind the tape. Used also for reverse picture search operation during playback and for skip scan operation during rewinding.

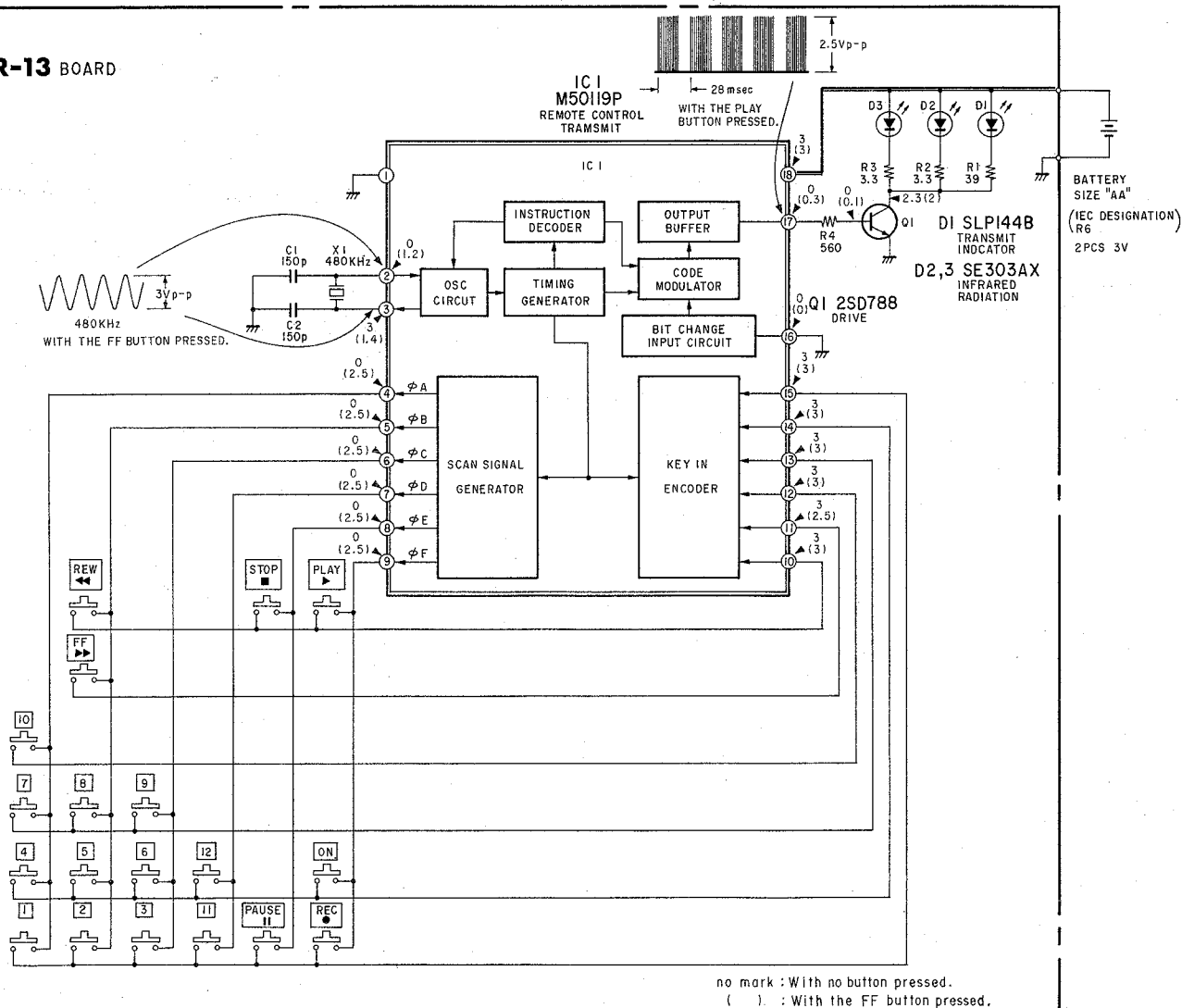
2. PRINTED WIRING BOARD

[IR-13 BOARD]



3. SCHEMATIC DIAGRAM

IR-13 BOARD



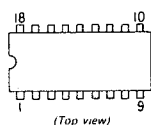
- All resistors are in ohms, 1/6W unless otherwise noted.
- All capacitors are in μF (p:pF) unless otherwise noted.
50V or less are not indicated except for electrolytic capacitors.
-  : B + bus.

The voltage value is measured using
a digital tester (10M Ω /V).

When indicating parts by reference number, please include
the board name.

-  indicates a lead wire mounted on the component side.
-  indicates a lead wire mounted on the printed side.
-  Conductor side (inner)
-  Conductor side
-  B + pattern

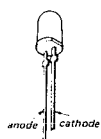
M50119P



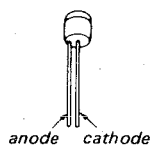
2SD788



SE303AX
SE303AY



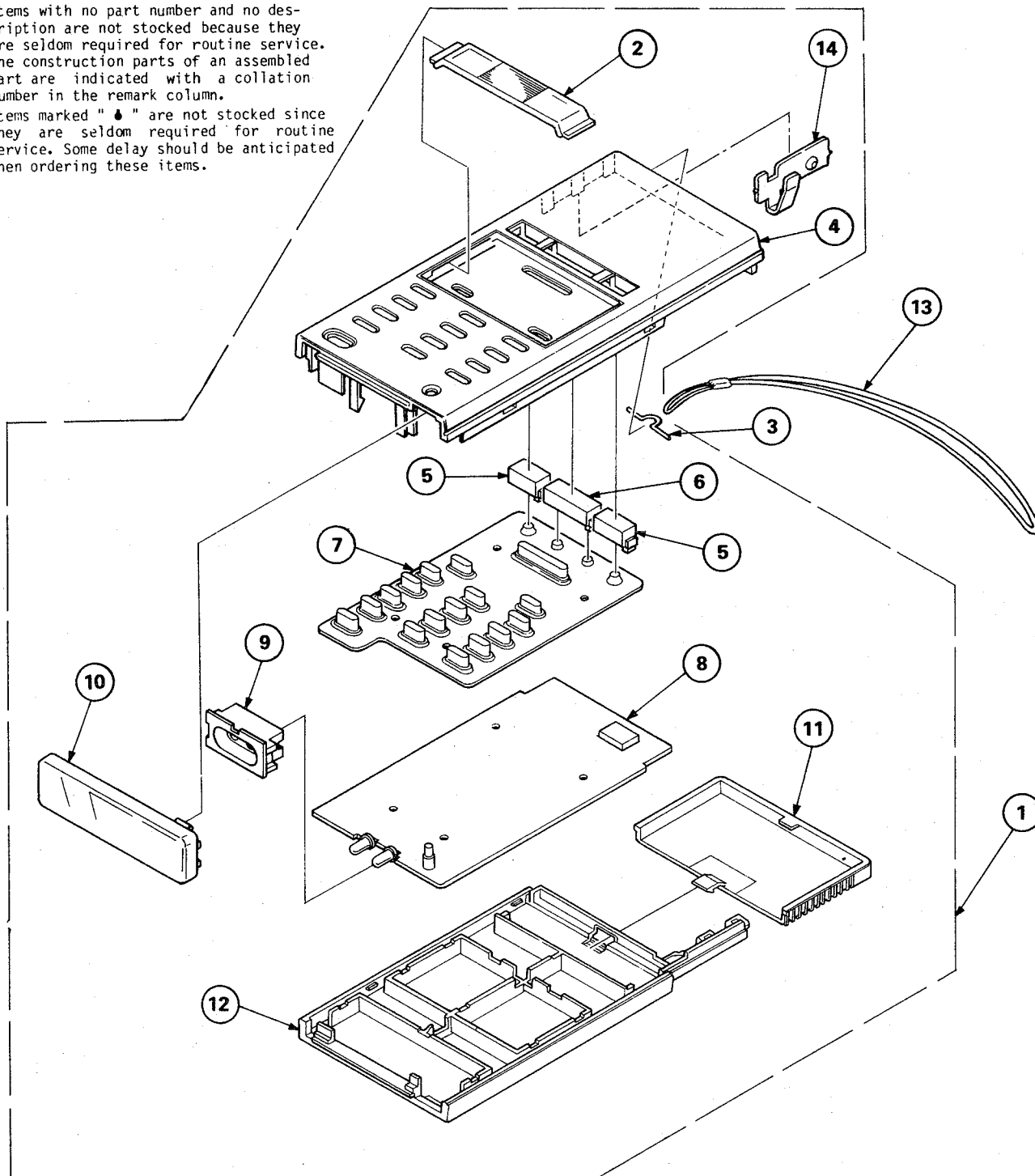
SLP144B



4. EXPLODED VIEW

NOTE:

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "▲" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.



No.	Part No.	Description	Remark	No.	Part No.	Description	Remark
1	A-6765-177-A	COMMANDER ASSY RMT-216S (SILVER)	2,3,4,5,6,7,8,9,10,11,12,14	7	2-374-636-00	RUBBER (L), CONTACT	
	A-6765-286-A	COMMANDER ASSY RMT-216R (RED)		8	▲1-610-257-00	IR-13 BOARD	
2	2-290-603-00	CURSOR	2,4,5,6,7,8,9,10,11,12,14	9	2-298-402-00	MIRROR	
3	▲2-290-630-00	STOPPER, HOLDER		10	2-290-608-00	PLATE, FROSTED	
4	X-2374-604-0	CASING ASSY (SILVER)		11	2-290-606-00	COVER, BATTERY (SILVER)	
	X-2290-627-0	CASING ASSY (RED)			2-290-606-11	COVER, BATTERY (RED)	
5	2-290-633-00	PUSH BUTTON (M)		12	2-290-611-00	CASE, LOWER (SILVER)	
6	2-290-632-00	PUSH BUTTON (L)			2-290-611-11	CASE, LOWER (RED)	
				13	4-352-958-00	STRAP, HAND	
				14	4-350-925-00	TERMINAL (C), BATTERY	

5. ELECTRICAL PARTS LIST

NOTE:

The components identified by shading and mark **A** are critical for safety. Replace only with part number specified.

•=>: Due to standardization, interchangeable replacements may be substituted for parts specified in the diagrams.

• Items marked "A" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

CAPACITORS
• MF : μF , PF : $\mu\mu F$

RESISTORS
• All resistors are in ohms
• F : nonflammable

COILS
• MMH : mH, UH : μH

When indicating parts by reference number, please include the board name.

Ref.No.	Part No.	Description	Remark
	A :1-610-257-00	IR-13 BOARD *****	
	2-290-601-00	TERMINAL (A), BATTERY	
	2-290-602-00	TERMINAL (B), BATTERY	
<u>CAPACITOR</u>			
C1	1-102-108-00	CERAMIC 150PF 10% 50V	
C2	1-102-108-00	CERAMIC 150PF 10% 50V	
<u>DIODE</u>			
D1	8-719-901-44	DIODE SLP144B	
D2	8-719-193-03	DIODE SE303AX	
D3	8-719-193-03	DIODE SE303AX	
<u>IC</u>			
IC1	8-759-600-07	IC M50119P	
<u>TRANSISTOR</u>			
Q1	8-729-378-84	TRANSISTOR 2SD788	
<u>RESISTOR</u>			
R1	1-247-797-00	CARBON 39 5% 1/6W	
R2	1-247-771-00	CARBON 3.3 5% 1/6W	
R3	1-247-771-00	CARBON 3.3 5% 1/6W	
R4	1-247-825-00	CARBON 560 5% 1/6W	
<u>CRYSTAL</u>			
X1	1-527-476-00	OSCILLATOR, CERAMIC	

SL-C35AS

ADJUSTMENT MANUAL

Australian Model



711B CHASSIS

Beta
B VIDEO CASSETTE RECORDER
SONY®

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SECTION 1

PREPARATION FOR MECHANICAL SECTION CHECK, ADJUSTMENT, AND REPLACEMENT

1-1. REMOVAL OF THE CASE AND FRONT PANEL

- 1) Remove the four screws ①.
- 2) Remove the upper case ② in the direction shown by the arrow A.
- 3) Remove the seven screws ③ and the lower case ④ in the direction shown by the arrow B.
- 4) Remove the five screws ⑤ and the front panel ⑥ in the direction shown by the arrow C.

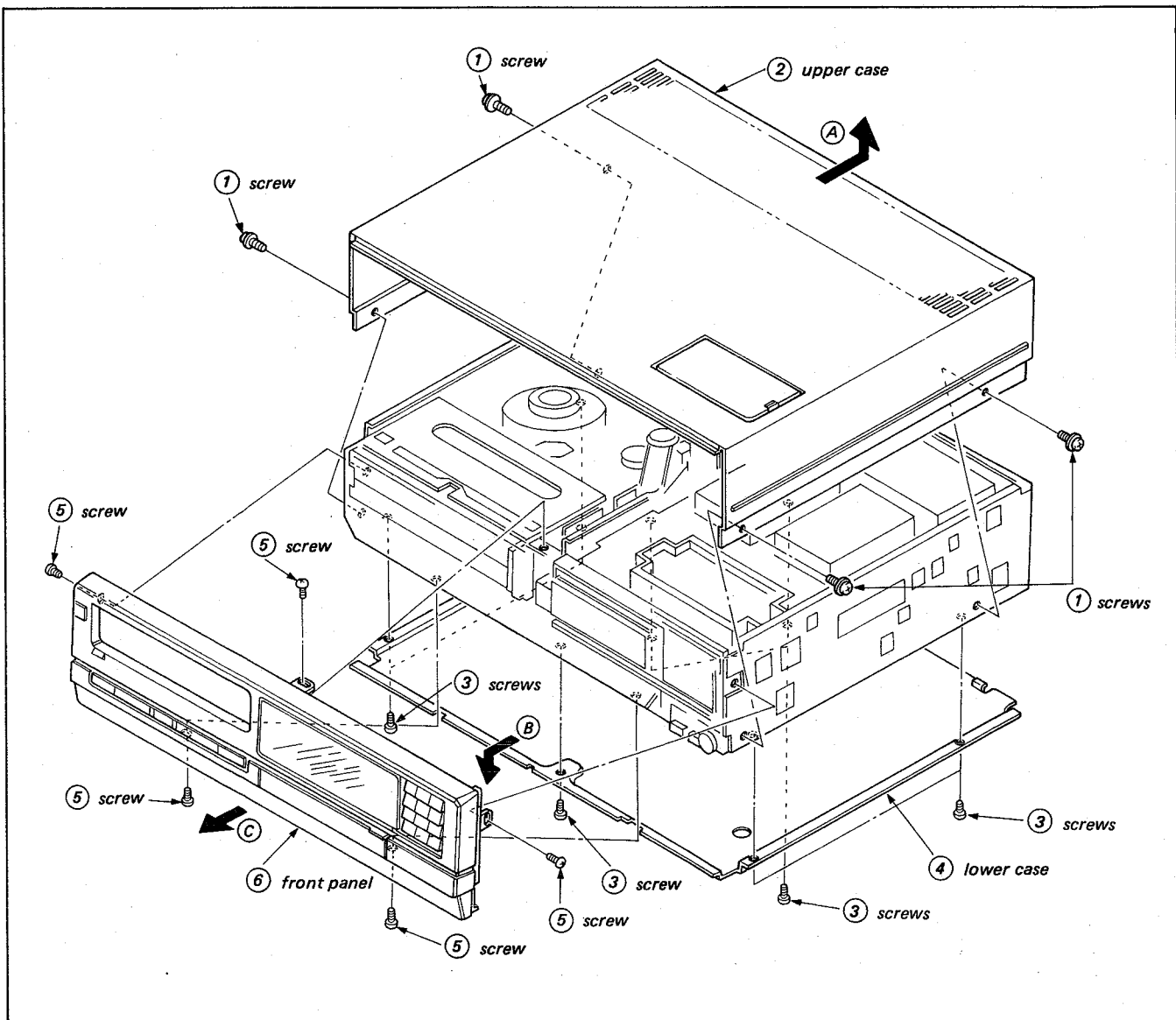


Fig. 1-1. Removal of the Case and Front Panel

1-2. DISMOUNTING THE RY-1 BOARD

- 1) Stand the set with the right side panel on the bottom.
- 2) Remove the two screws ①, holding the RY-1 board.
- 3) Swing open the RY-1 board in the direction shown by the arrow ④ and rest it on a cassette.

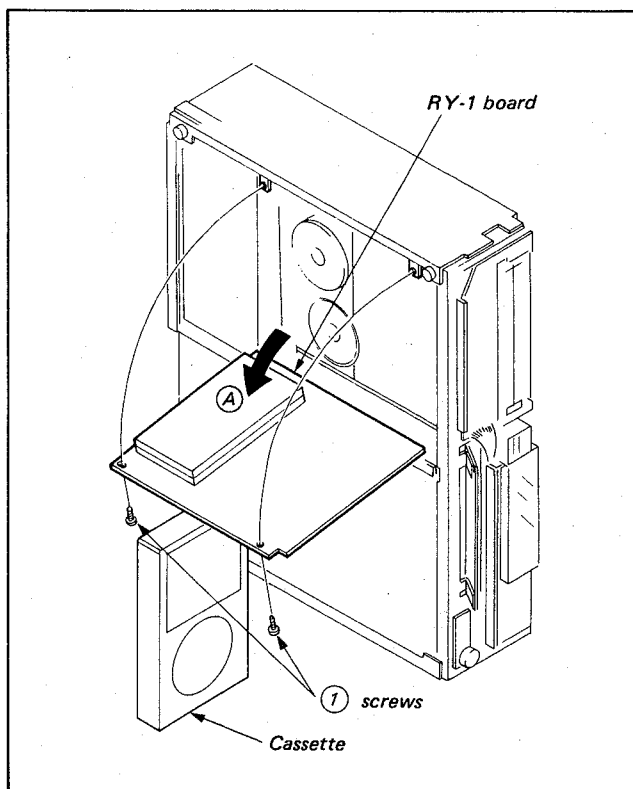


Fig. 1-2. Dismounting the RY-1 Board

1-3. DISMOUNTING THE TU-39 BOARD

- 1) Remove the four screws ① holding the TU-39 board.
- 2) Remove the TU-39 board in the direction shown by the arrow ④.

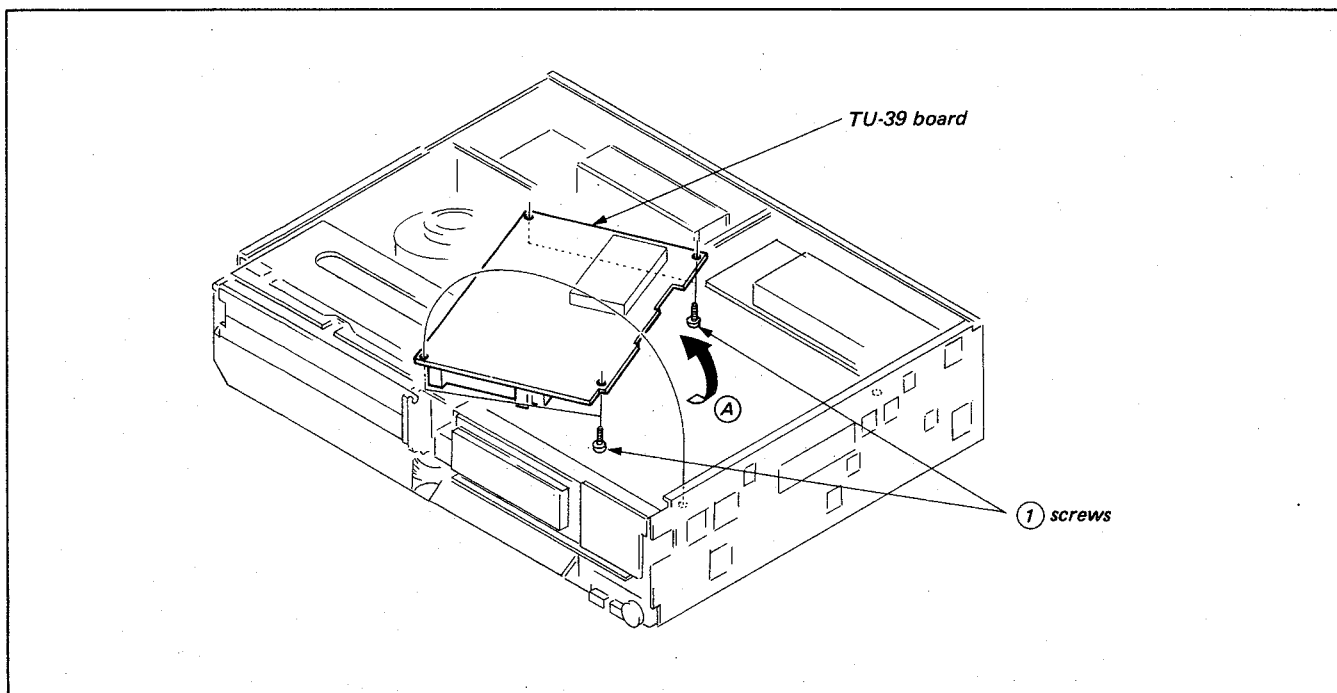


Fig. 1-3. Dismounting the TU-39 Board

1-4. DISMOUNTING THE YC-25 BOARD

- 1) Stand the set with the power source side on the bottom.
- 2) Remove the screw ① and the panel connector ②.
- 3) Remove the four screws ③, holding the YC-25 board.
- 4) Swing open the YC-25 board in the direction shown by the arrow ④ and rest it on a cassette.

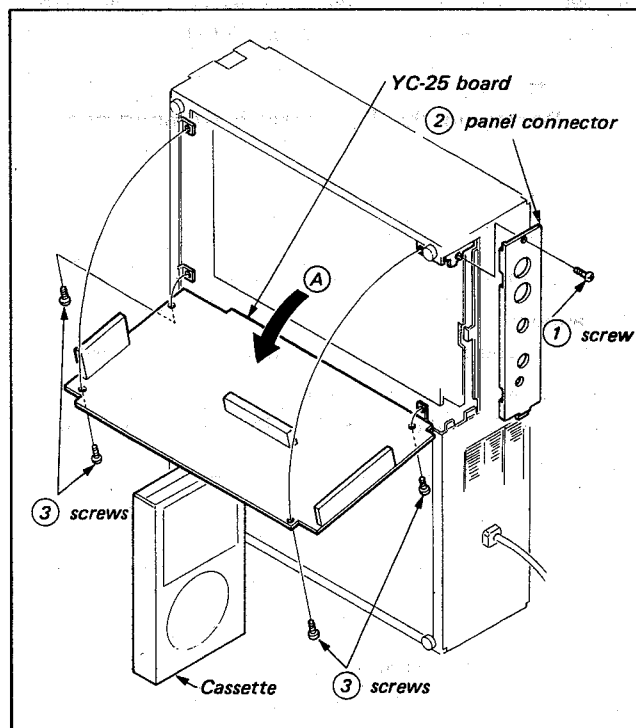


Fig. 1-4. Dismounting the YC-25 Board

1-5. REMOVING OF POWER BLOCK

- 1) Remove the two screws ①, and the shield plate.
- 2) Pull out the six connectors ②, (CN301, 302, 304, 306, 403, 405) from the power block side.
- 3) Remove the three screws ③ and the power cord bracket.
- 4) Remove the five screws ④, holding the power block.
- 5) Remove the power block in the direction shown by the arrow ⑤.

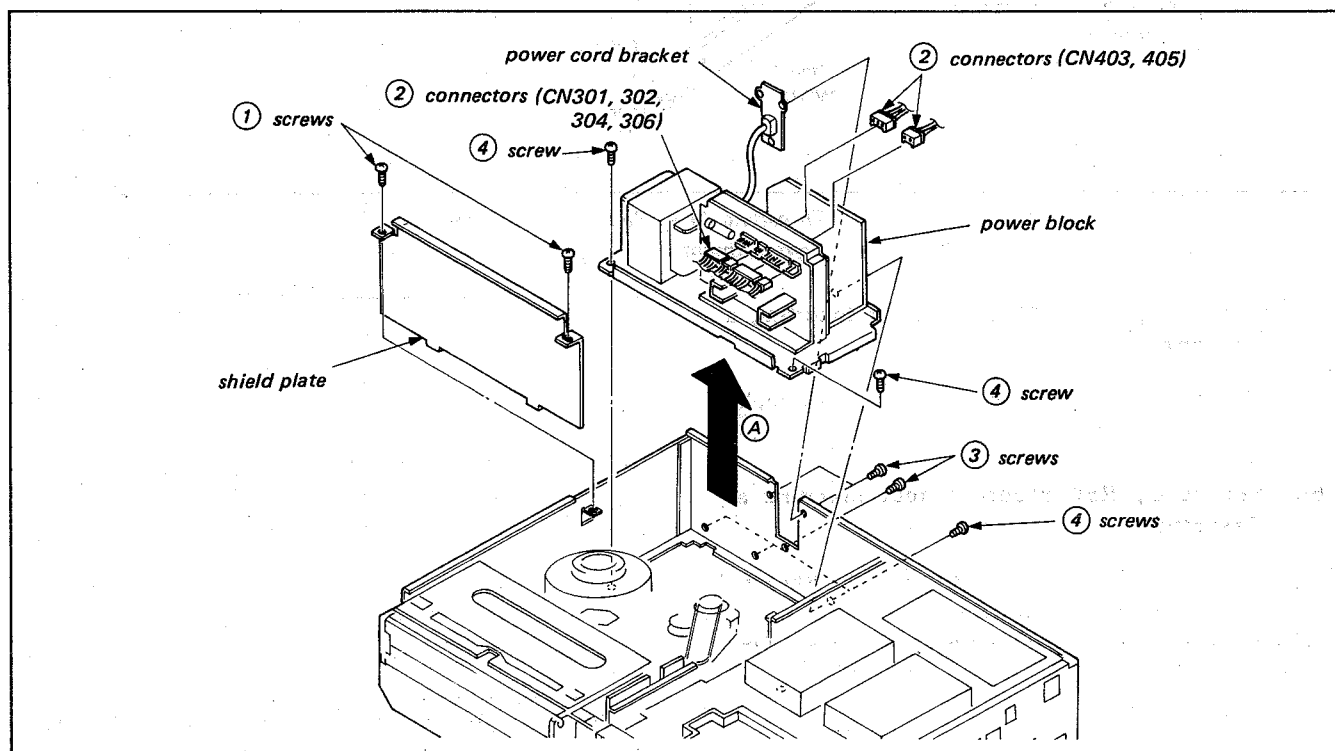


Fig. 1-5. Removing of Power Block

1-6. MECHANICAL OPERATION AFTER REMOVING THE FL CASSETTE COMPARTMENT

1-6-1. Attaining Threading Complete State after Removing the FL Cassette Compartment.

Refer to Section 3-6 describing the dismounting of the FL cassette compartment.

- 1) Short Pins (1) and (2) and also Pins (3) and (4) of the connector (CN301) on the CS-3 board using two wires.

Caution:

Do not contact other parts in the set with the wires.

- 2) Threading is started by turning on the POWER button while pushing the CASSETTE IN switch with a finger.

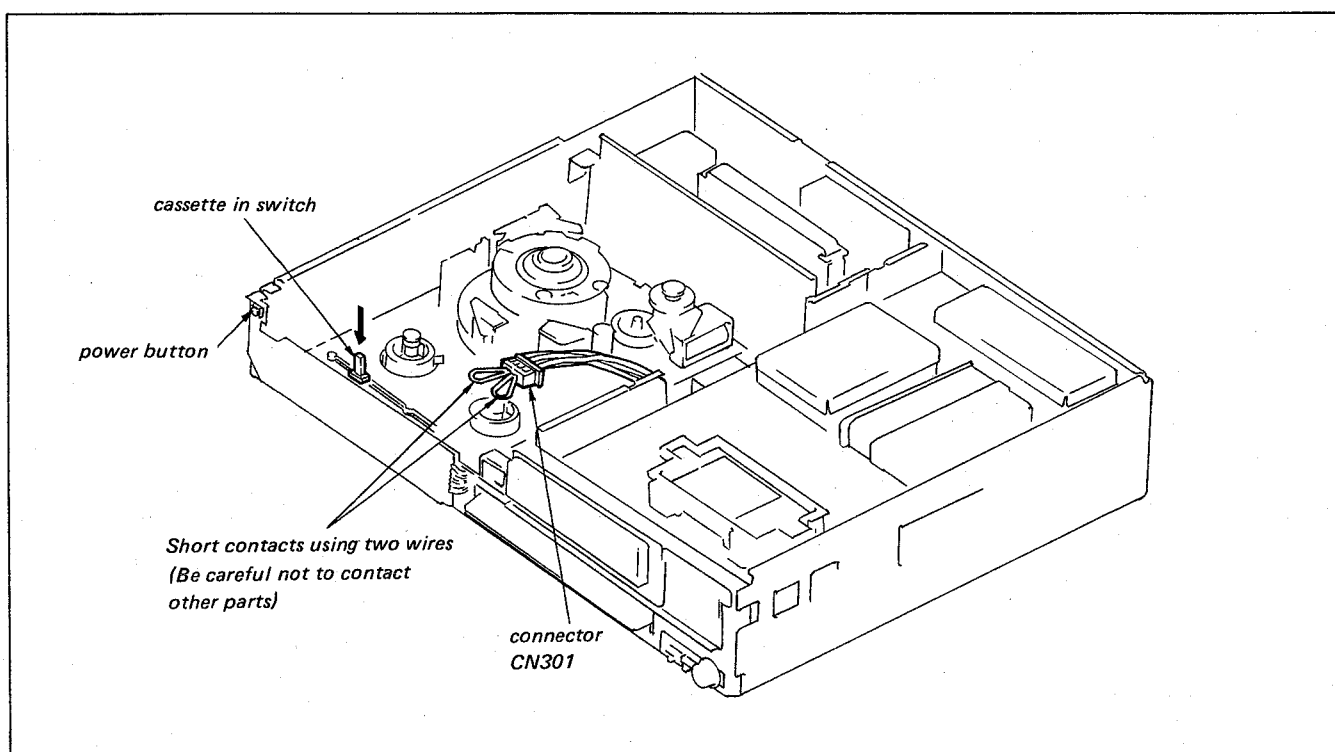


Fig. 1-6. Threading After Removing FL Cassette Compartment

1-6-2. Setting Up PLAY Mode without Inserting a Cassette

Press the PLAY button after setting up the threading complete state as described in 1-6-1.

1-6-3. Setting Up REC Mode without Inserting a Cassette

- 1) Thread as described in 1-6-1, then press the RECORD PROOF switch shown in the diagram.
- 2) Press the REC button while depressing the RECORD PROOF switch.

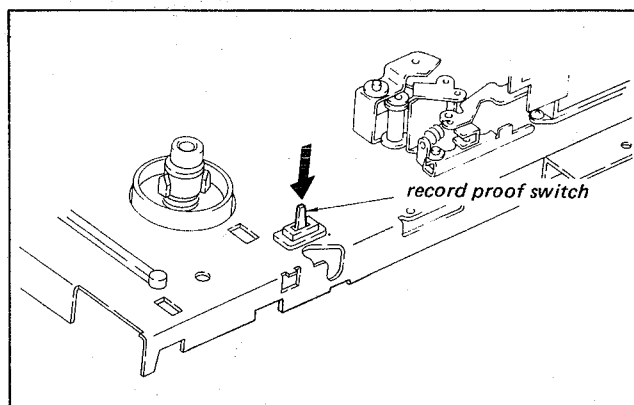


Fig. 1-7. Setting Up the REC Mode After Removing FL Cassette Compartment.

1-7. LOADING, THREADING, UNLOADING, AND UNTHREADING WHILE THE POWER IS OFF

1-7-1. Manual Loading and Unloading

- 1) Press stopper arm ① in the direction of the arrow ③ after releasing the prevention levers on the right and left sides inside the cassette compartment. Unlock the internal gear ②.
- 2) Rotate the internal gear ② in the direction of the arrow ④ until loading is completed.
- 3) Rotate the internal gear ② in the direction of the arrow ⑤ during unloading.

Note:

Rotate the worm gear ④ with a finger to load and unload when the loading belt ③ has become detached.

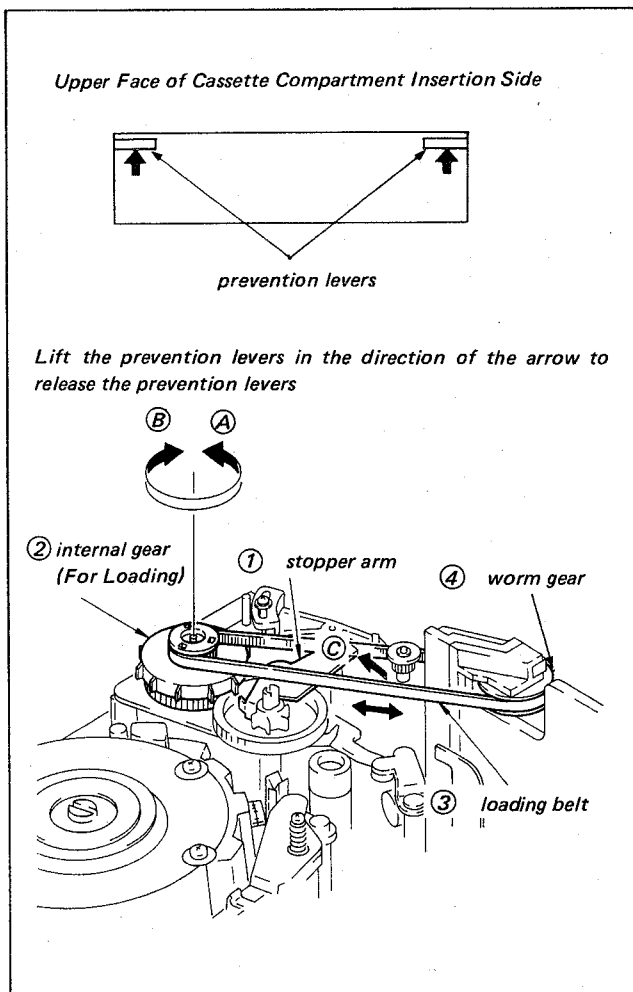


Fig. 1-8. Manual Loading and Unloading

1-7-2. Manual Threading and Unthreading

- 1) Rotate the loading gear in direction of the arrow ④ until threading is completed.
- 2) Rotate the loading gear in the direction of the arrow ⑤ for unthreading.

Caution:

Do not use a screwdriver, or other item, to rotate the loading gear. Push the side of the gear with a finger to rotate.

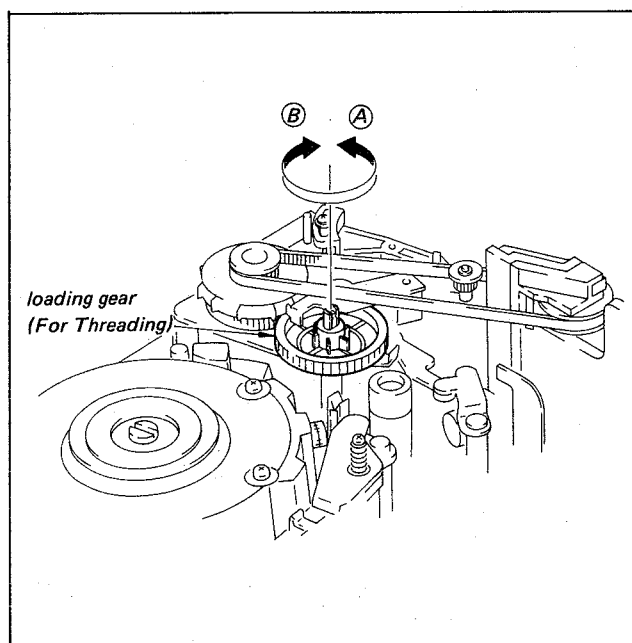
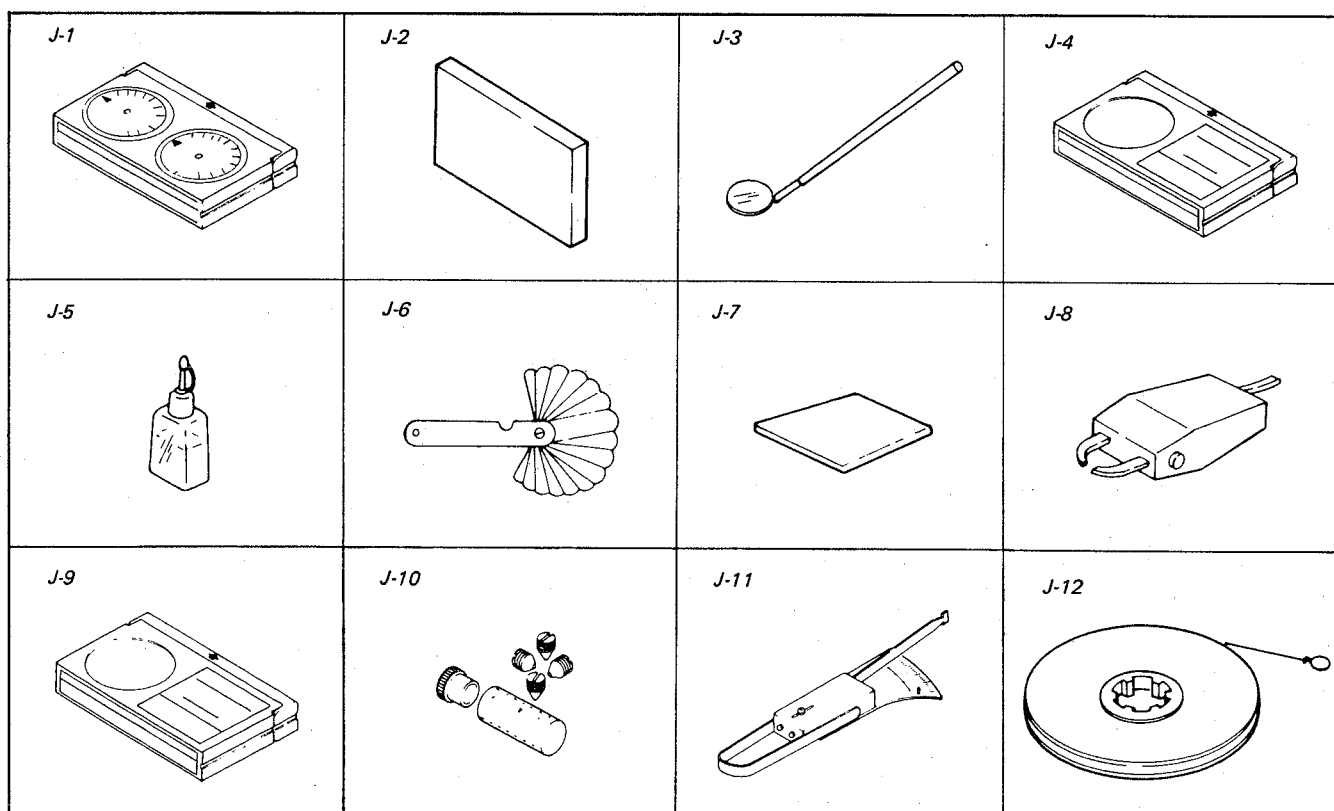


Fig. 1-9. Manual Threading and Unthreading

1-8. TOOLS AND FIXTURES REQUIRED

Ref. No.	Name	Part No.	Fixture No.
J-1	Forward-Back Tension Measurement Tape	J-6080-003-C	SL-0003C
J-2	Parallel Plate	J-6086-750-A	SL-0657
J-3	Small Adj. Mirror Spare Mirror	J-6080-029-A J-6080-030-1	SL-5052
J-4	Alignment Tape	8-969-995-52	KR5-2H
J-5	Cleaning Fluid	Y-2031-001-0	
J-6	Thickness Gauge	9-911-053-00	
J-7	Cleaning chamois	2-034-697-00	
J-8	Head Demagnetizer		
J-9	Lapping Tape	8-888-004-00	
J-10	Dihedral Adj. Screw	J-6080-013-1	SL-0013
J-11	Sector type gauge 50 g Max	7-732-050-20	
J-12	Reel Table Tension Fixture	J-6080-011-A	SL-0011

ITEMS J-5, J-6, J-7, J-8 can be obtained locally



SECTION 2

PERIODIC CHECK AND MAINTENANCE

The following maintenance and periodic checks are recommended to ensure optimum machine function and performance and to prolong machine and tape life.

2-1. MAINTENANCE AFTER REPAIR

Carry out maintenance work for the following items after repairing the machine regardless of the period of use.

2-1-1. Rotary Head Disc Assembly

- 1) Place a piece of chamois (tool Ref. No. J7) soaked in cleaning fluid (tool Ref. No. J5) lightly against the rotary drum assembly and clean the rotary head disc assembly by slowly rotating it by hand. (Important-Do not clean by rotating with the motor on.)
- 2) Do not clean the head tip by moving the chamois in a vertical direction. This may damage the head tip.

2-1-2. Cleaning of the Tape Transportation System

Clean the tape contact surfaces, such as the tape guide, drum assembly surfaces, capstan, and pinch roller, using cleaning piece etc. soaked in cleaning fluid.

2-1-3. Cleaning of the Drive System

Clean the driving elements (reel base surfaces, etc.) using a cloth soaked in cleaning fluid.

2-2. PERIODIC CHECK ITEMS

Carry out maintenance checks for the following items depending on the duration of use.

Maintenance & Check		Operating Hours (H)										Remarks
		500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	
Tape Transportation System	Cleaning of tape transportation system	○	○	○	○	○	○	○	○	○	○	This cleaning must be done whenever a repair is made.
	Cleaning and degaussing of ACE ass'y	○	○	○	○	○	○	○	○	○	○	
	Cleaning & degaussing of video disk ass'y	○	○	○	○	○	○	○	○	○	○	The life of the head varies, depending on operational conditions and method.
Driving System	Loading belt	○	○	○	○	○	○	○	★	○	○	• This cleaning must be done whenever a repair is made. • Replacement must be done depending on operating hours on the table, or every two years.
	Cleaning of iron core and opening of solenoid	—	—	—	○	—	—	—	○	—	—	Wipe iron core and opening of solenoid with dry cloth.
Performance Confirmation	Abnormal sound	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Adjust or replace the section which causes abnormal sound.
	Measurement of FWD back tension	—	☆	—	☆	—	☆	—	☆	—	☆	Confirmation must be made according to section Specified value: 30 ± 5 g·cm (When measured with torque cassette tape)
	Confirmation of brake system	—	☆	—	☆	—	☆	—	☆	—	☆	Confirmation must be made according to section
	Confirmation of record & playback functions	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	Perform the confirmation whenever repair is made.

○ Cleaning ★ Replacement ☆ Confirmation

Note: When overhauling, refer to the above for part replacement.

SECTION 3

CHECK, ADJUSTMENT, AND REPLACEMENT PROCEDURES

3-1. REPLACEMENT OF ROTARY HEAD DISC ASSEMBLY

3-1-1. Removal of Rotary Head Disc Assembly

- 1) Unscrew the two screws ① holding the damper assembly and remove it.
- 2) Remove the hexagonal socket bolt ② with an Allen wrench and dismount the upper drum assembly.

Note:

Remove the upper drum while rotating it, without moving the adjust plate ④. Be very careful not to move the adjust plate ④, or tape path will be affected.

- 3) Unsolder the rotary head disc circuit board. (four red and white lead wires)
- 4) Remove the two hexagonal socket bolts ③ and dismount the disc assembly.

Note:

Be very careful not to touch the head tip, or touch it against anything.

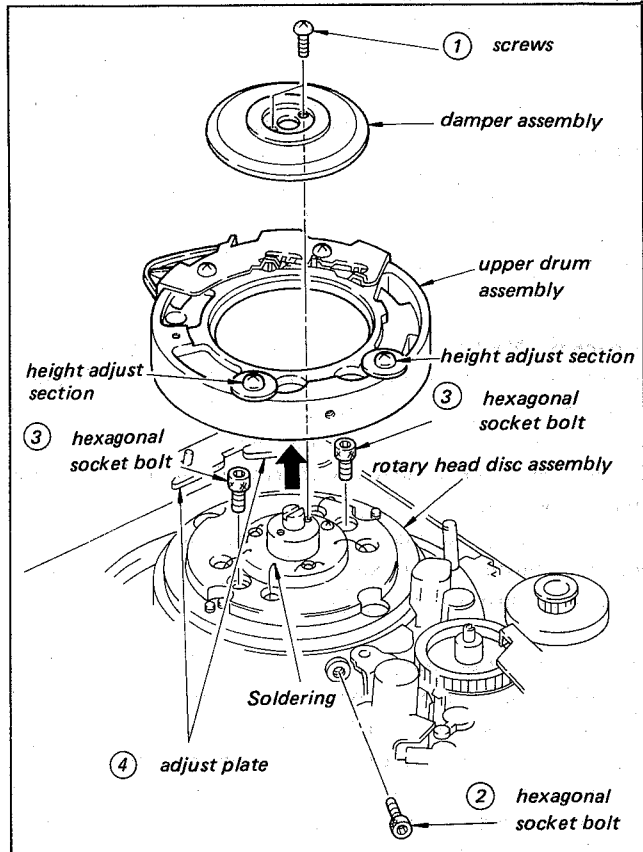


Fig. 3-1. Dismounting the Rotary Head Disc Assembly

3-1-2. Replacement

- 1) Position the rotary head disc, paying attention to the direction of the red and white lead wires.
- 2) Tighten the hexagonal socket bolt ③ and solder the lead wire.

Note:

Solder securely, being careful not to break the lead wires.

- 3) Mount the upper drum without moving the adjust plates ④ as when dismounting it and tighten the hexagonal socket bolt ② while pressing two height adjust sections.

Caution:

Be careful not to touch the head tip when replacing the drum.

Note:

When replacing the rotary drum head, it may be difficult to remove it from the head disc. In this event, follow the procedure below. (Fig. 3-2)

- (1) Remove the hexagonal socket bolts ③ bolting the rotary head disc assembly.
- (2) When the rotary head disc assembly is fitted tightly and cannot be readily dismounted, alternately and slowly insert the two hexagonal socket bolts ③ unbolted in (1) above it removal holes at 90° to the mounting holes. The rotary head disc assembly can be lifted by the force of the two screws and dismounted easily.

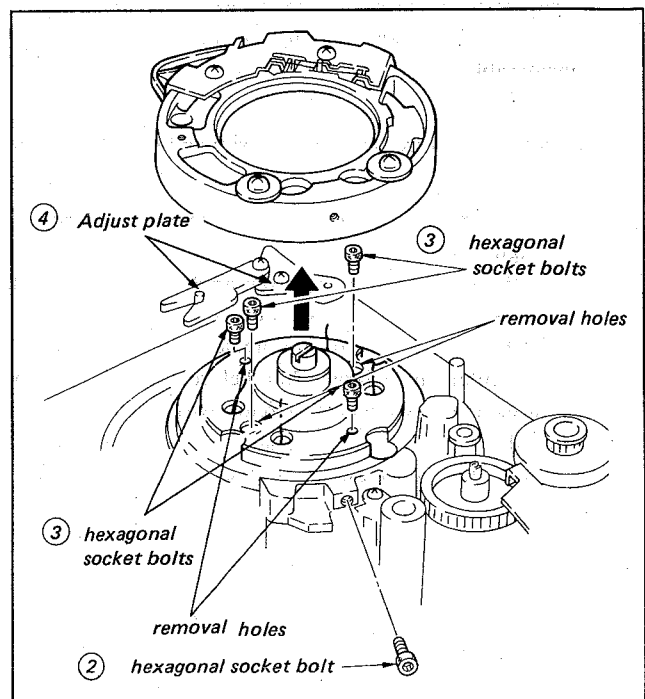


Fig. 3-2. Replacing Rotary Head Disc Assembly

3-2. VIDEO HEAD DIHEDRAL ADJUSTMENT

Generally this adjustment is not necessary except after video head disc replacement. (Video head discs for repair and replacement are precision adjusted using a microscope, and there is virtually never a need for readjustment.)

When determining the appropriate video head angle, play back an alignment tape. Make sure the tracking control knob is set at the center click position. When the check is made at a position other than the center click (tracking is off), the pictures will be played back as if the angle is wrong even if it is correct. Be sure the ACE assembly position adjustment is completed (refer to "Tape Path Adjustment") before making this adjustment.

[Checking Method]

Play back the monoscope signal section of the alignment tape (KR5-2H) after setting the tracking control knob at the center click position. Verify that only one monoscope perpendicular line is played back immediately underneath the switching pulse, and not two lines.

If only one perpendicular line can be seen, the angle is correct, and no adjustment is needed.

If there are two, adjust as follows.

[Adjustment Procedure]

1. As shown in Fig. 3-3, screw in the two angle adjustment screws (Tool Ref. No.J-10) so that the lead wires from the video head are on the same level as the red adjusting screw hole and the top of the adjusting screw hole, and the top of the adjusting screw is on the same level as the top of the video head disc.

(If not screwed in sufficiently, the heads of the adjustment screws hit the upper drum, and the video head disc no longer rotates. Conversely, if they are screwed in too far, the head base moves, and the angle of the video head shifts considerably.)

Caution:

The white lead wire is a reference wire and should never be moved.

2. Screw in either one of the two adjustment screws until it feels tight. Additional tightening beyond this position moves the video head and so the angle can be adjusted.
3. Play back the monoscope signal section of the alignment tape (KR5-2H) and verify the angle. If the angle of the perpendicular line is larger than before adjustment, screw the adjustment screw counterclockwise to loosen and adjust the screw on the other side.
4. After adjusting, unscrew and check again.

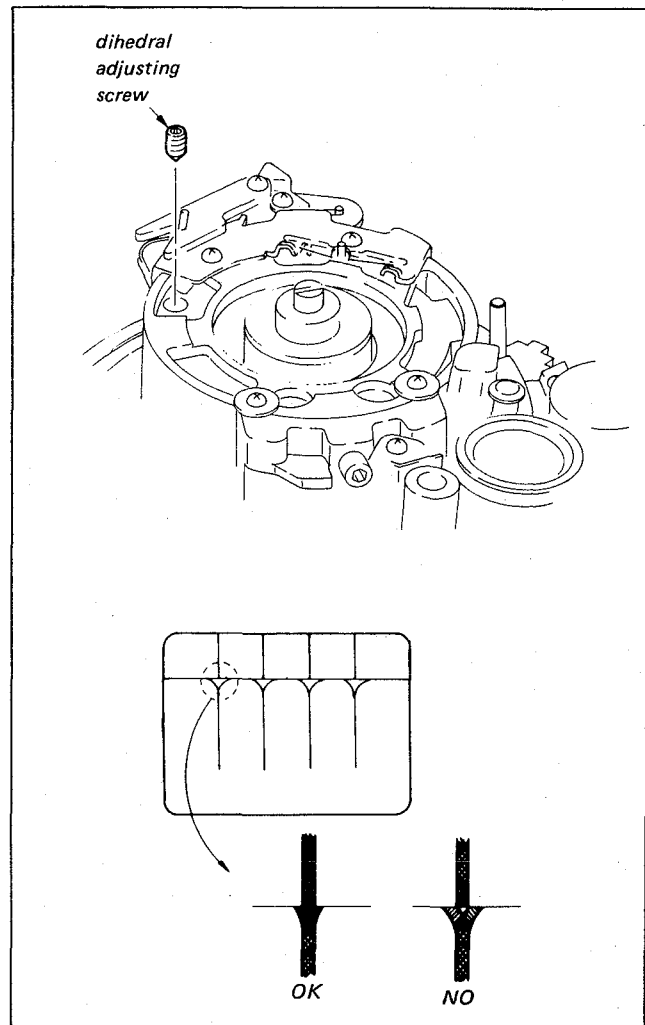


Fig. 3-3. Video Head Dihedral Adjustment (1)

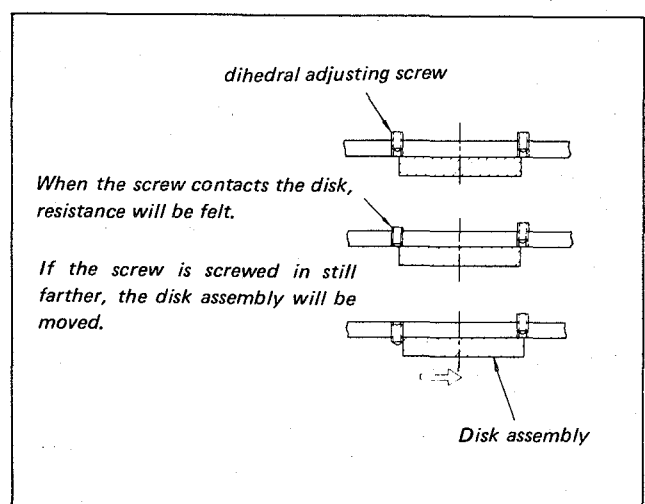


Fig. 3-4. Video Head Dihedral Adjustment (2)

3-3. REPLACEMENT AND ADJUSTMENT OF DRUM ASSEMBLY

3-3-1. Replacement

- 1) Measure and record the two gaps (A) between the upper drum tape holding section and the adjust plates (in Fig. 3-5). (Do not forget to do this, as the adjust plate mounting position affects the tape path.)
- 2) Unscrew the screws ① shown in Fig. 3-5 and remove the tape guide ground plate and adjust plates (2) and (3-1).
- 3) Remove the connector and three drum mounting screws from the bottom of the chassis and remove the drum assembly body.
- 4) Re-assemble the parts in reverse order.
- 5) Adjust according to "Tape Path Adjustment" after replacing the drum.

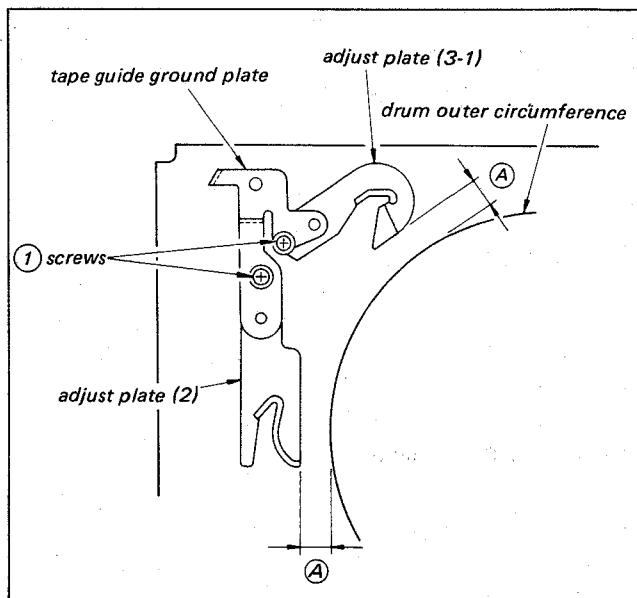


Fig. 3-5. Replacing Drum

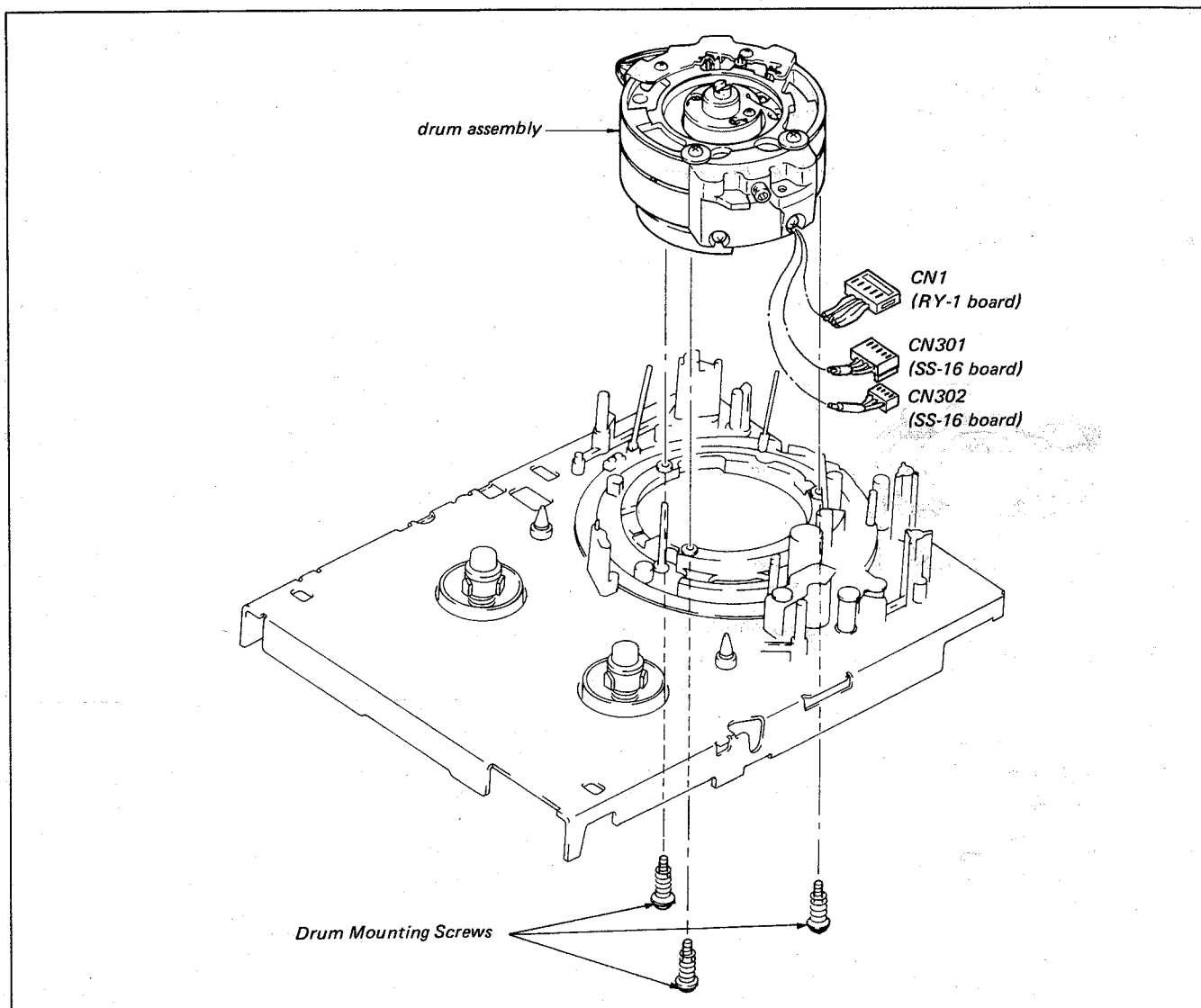


Fig. 3-6. Dismounting Drum Assembly

3-3-2. Motor Clearance Adjustment when Replacing Drum Assembly

When replacing the drum assembly, adjust so that clearance between the rotor and coil is 0.3 — 0.6 mm. (See Fig. 3-7)

[Procedure]

- 1) When re-assembling the drum, use the spacer which was removed and confirm that the 0.3 mm side of the clearance gauge included with the repair drum can be inserted, and that the 0.6 mm side cannot be inserted.
- 2) If this specification is not satisfied, dispose of the old spacer and use the spacers (0.3 mm × 4) included with the new repair drum as needed.

* Clearance Confirmation

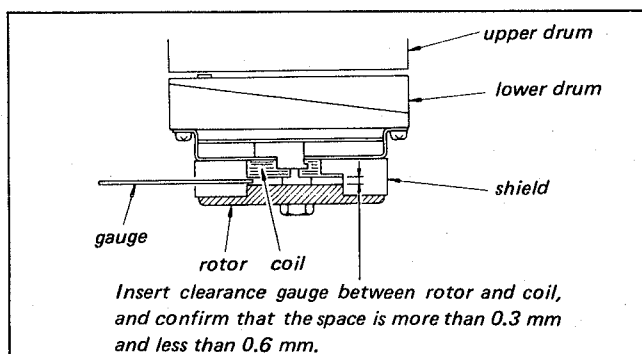


Fig. 3-7. Adjusting Motor Clearance When Replacing Drum Assembly

[Removal of Stator, Rotor]

- 1) Remove nut ① and washer ②.
- 2) Remove rotor ③ from stator ④.
- 3) Unscrew the two screws ⑤ and remove stator from drum body.

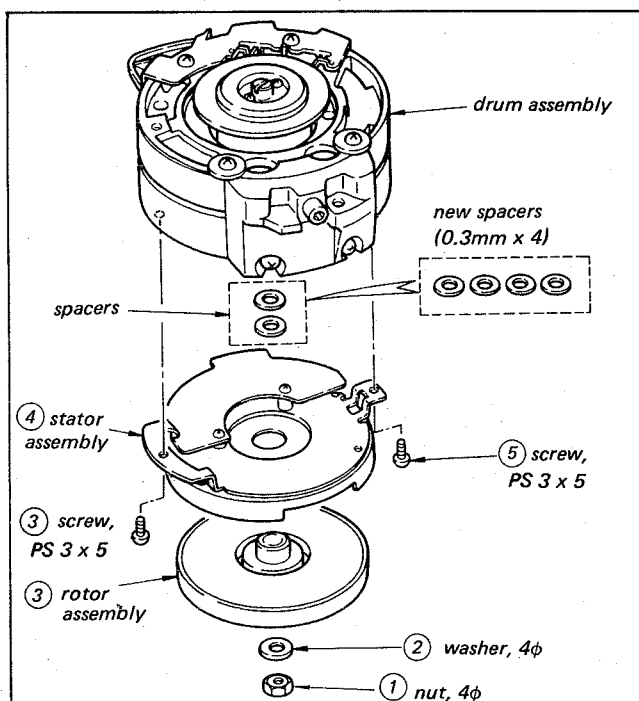


Fig. 3-8. Dismounting Stator and Rotor When Replacing Drum Assembly

3-4. REPLACEMENT AND ADJUSTMENT OF CAPSTAN MOTOR

3-4-1. Removal of the Capstan Motor (Fig. 3-9)

Unscrew screws ①, ②, ③ and remove the capstan motor from the mechanism chassis.

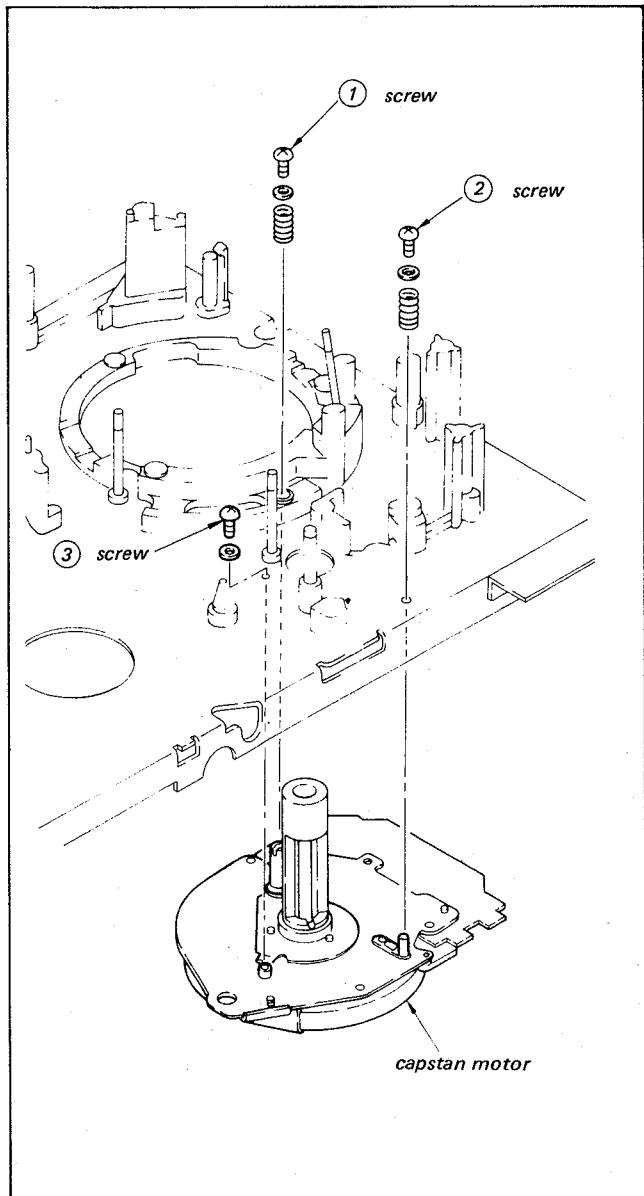


Fig. 3-9. Dismounting Capstan Motor

3-4-2. Perpendicular Adjustment of Capstan Spindle

Be sure to adjust as follows after the capstan motor has been replaced or removed:

- 1) Place parallel plate (Tool Ref. No. J-2) on No. 10 guide sleeve of the pinch press arm assembly perpendicularly, as shown in Fig. 3-10.
- 2) Loosen screw ①.
- 3) Rotate adjusting screw ② and align the capstan spindle perpendicularly.
- 4) Tighten screw ① and fix the capstan motor.
- 5) Adjust according to "Tape Path Adjustment".

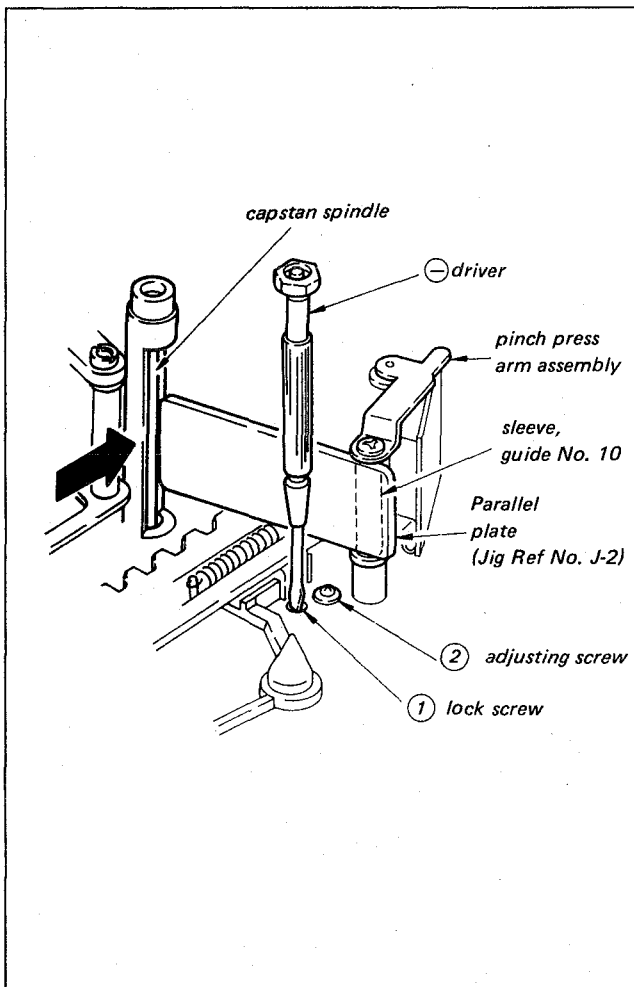


Fig. 3-10. Perpendicular Adjustment of Capstan Motor Spindle

3-5. REMOVAL OF S COIL SENSOR ASSEMBLY (Fig. 3-11)

- 1) Remove spring ① and disengage hook ② to pull out the S coil sensor assembly.
- 2) Disconnect the connector from CN604 of the SS-16 board.

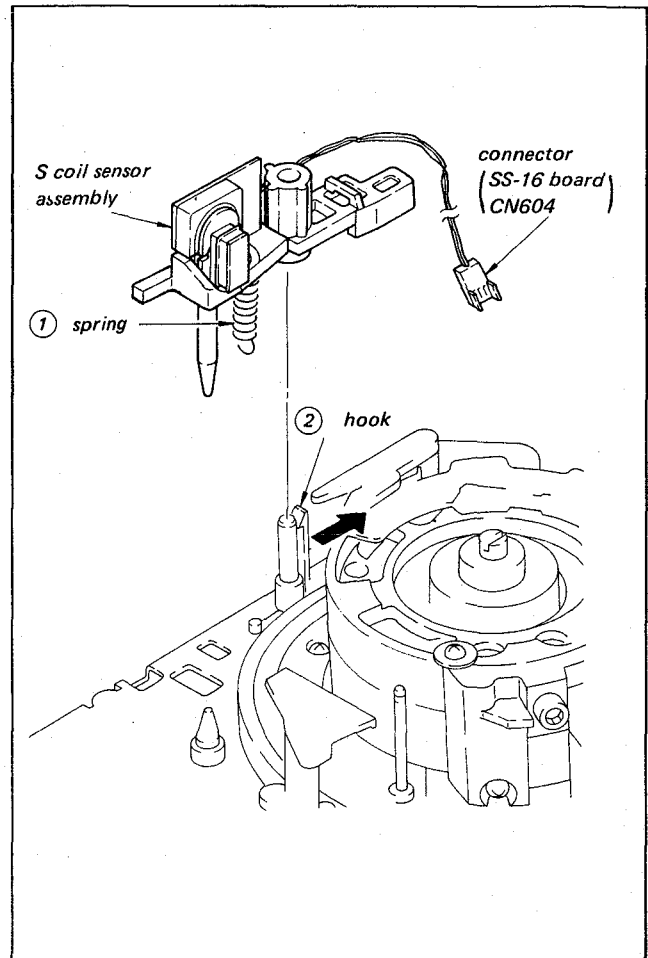


Fig. 3-11. Dismounting Tension Pickup Assembly

3-6. REMOVAL OF FL CASSETTE COMPARTMENT ASSEMBLY

- 1) Loosen the loading belt ①, exerting a force on the threading motor.
- 2) Remove the five mounting screws ② of the FL cassette compartment.
- 3) Disconnect the exposed connector from the CS-3 board (CN001) on the FL cassette compartment.
- 4) Lift the FL cassette compartment assembly in the direction shown by the arrow to remove.

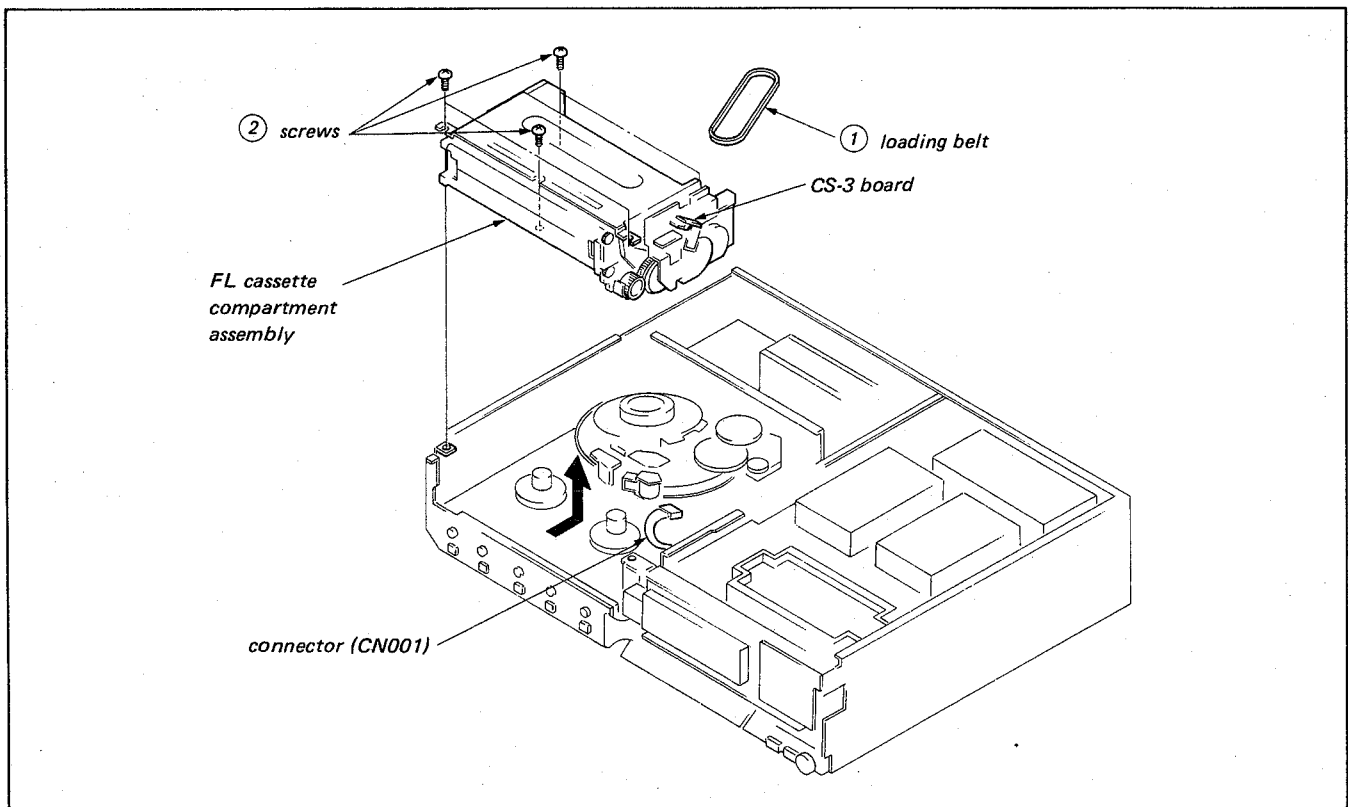


Fig. 3-12. Removal of FL Cassette Compartment Assembly

3-7. ADJUSTMENT OF FL CASSETTE COMPARTMENT ASSEMBLY

3-7-1. Mounting of FL Cassette Compartment Assembly (Fig. 3-13, 14)

- 1) Stretch the two hooks (2) of the FL cassette compartment on the mechanism chassis and place the cassette compartment in a predetermined position on the chassis.
- 2) Mount the FL cassette compartment assembly and loosely tighten the three screws (3).
- 3) Move the FL cassette compartment assembly longitudinally relative to the mechanism chassis, set in a predetermined position, then securely tighten the three mounting screws (3).
- 4) Suspend the loading belt (7) around the threading motor (4), tension pulley arm (5), and worm gear (6) and hold the loading belt (7) with the internal gear flange (8).
- 5) Push the car tension arm (5) in the direction of the arrow, to eliminate slack on the loading belt (7), then secure the arm (5) with the arm adjustment screw (1).
- 6) Insert the connector of the wire harness protruding from the body onto the connector CN001 (9) of the CS-3 board.

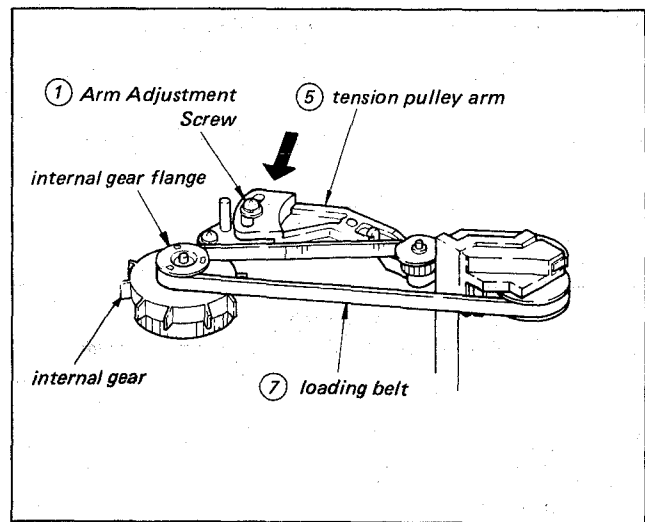


Fig. 3-14. Adjustment of Loading Belt

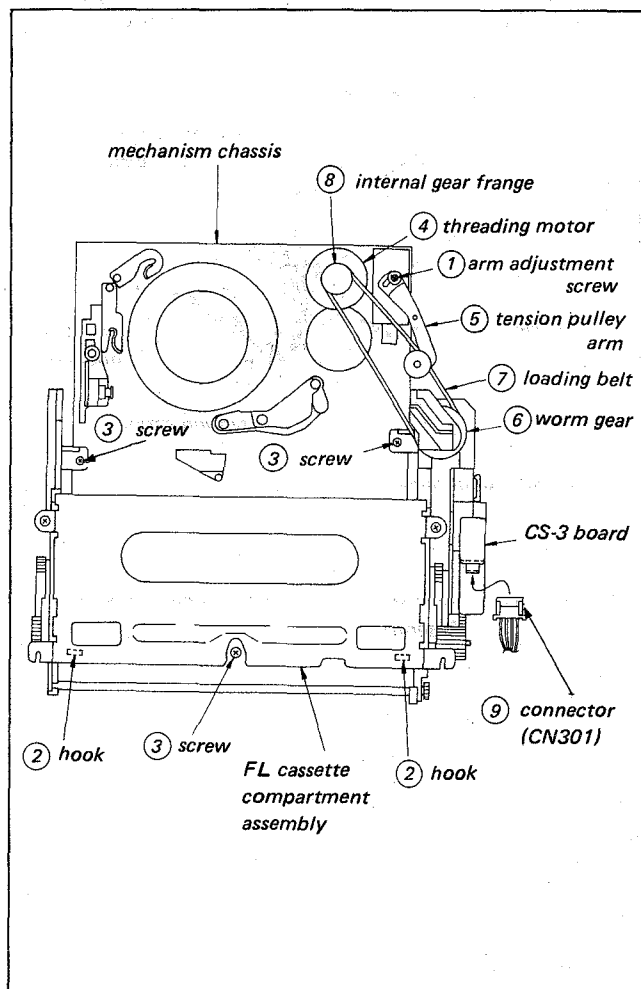


Fig. 3-13. Remounting FL Cassette Compartment

3-7-2. Adjustment of Cassette-ON Switch

Loosen the screw (2) which is fixing the cassette-ON cam (1). Move the cassette-ON cam in the arrow direction so that the microswitch (cassette on) (5) is turned on when the gap between the left end of the driving roller (3) and the end/face of the worm gear holder (4) is 8 mm to 10 mm. Then fasten the screw (2).

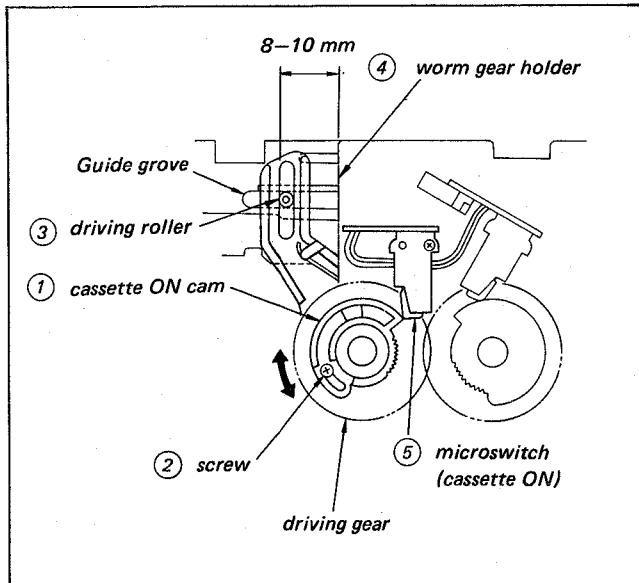


Fig. 3-15. Cassette-ON Switch Operation Check and Adjustment

3-7-3. Adjustment of Cassette-OFF Switch

Loosen the screw (2) which is fixing the cassette-OFF cam (1). Move the cassette-OFF cam in the arrow direction so that the microswitch (cassette off) (5) is turned off when the gap between the left end of the driving roller (3) and the end face of the worm gear holder (4) is 16 mm to 18 mm. Then fasten the screw (2).

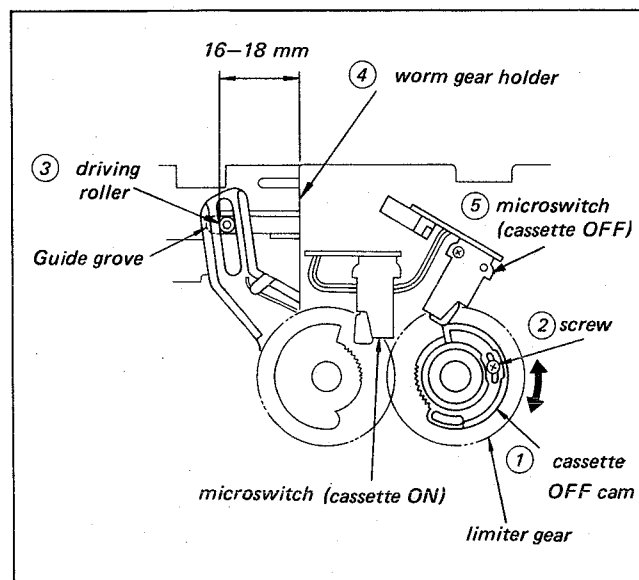


Fig. 3-16. Cassette-OFF Switch Operation Check and Adjustment

3-7-4. Check and Adjustment of Cassette Door Assembly

[Check Procedure]

Be certain that the upper door (2) and lower door (3) become perpendicular when the switching door arm (1) has fully returned in the direction of the arrow (A).

[Adjustment Procedure]

Check that the switching door rack plate (4) is fully returned, fit in the directions of arrows (B) and (C) so that the upper door (2) and lower door (3) become perpendicular when the tips of the switching door rack plate (4) and side plate, right (5) mismatch by about 1 mm, then match the teeth. Fit the outer door holder (6) into the side plate, right (5) and secure the upper door (2) and lower door (3).

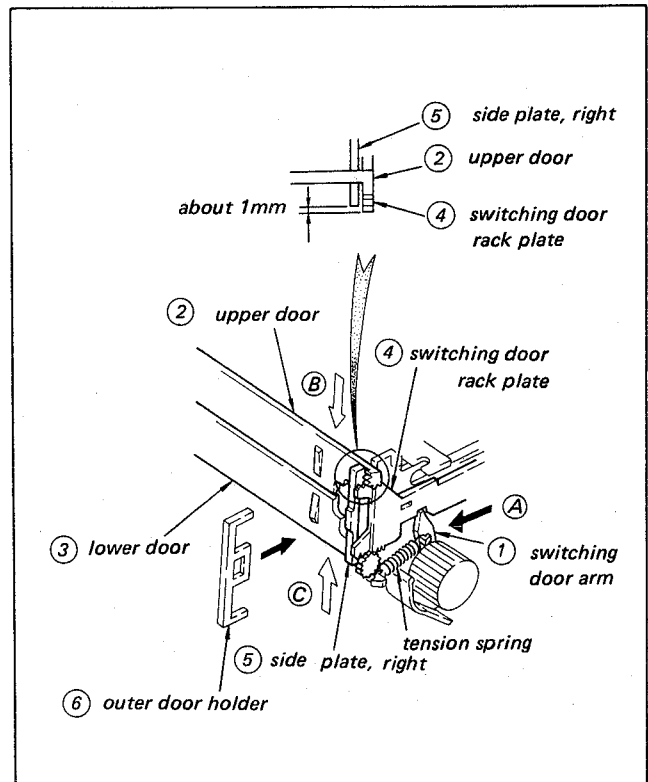


Fig. 3-17. Position Adjustment of Cassette Door Assembly

3-7-5. Position Matching of Right Worm Wheel of FL Cassette Compartment Assembly

In the FL cassette compartment assembly, the cassette holder feed rate is determined using a worm wheel system so that the cassette holder always moves parallel to the mechanism chassis. Therefore, cassette feeding cannot be performed properly unless the worm wheel gearing position is properly adjusted during subsequent assembly once gearing of this section has been moved from the normal position.

[Gear Positioning]

- 1) Prepare a rod about 1.5 mm thick and 200 mm long.
- 2) Pass the rod through the hole in the side plate, right and left (Perform on left and right sides.)
- 3) Insert the assembly comprising the driving arm, right ① and cassette-on cam ② on the positioning rod and assemble it on the right of the side plate, ③. Similarly assemble the driving arm, on the left of the side plate.
- 4) Insert the worm wheel ④ through the positioning rod as described in 3) above and assemble it on the right of the side plate ③.
- 5) Insert the assembly comprising the limiter gear ⑤ and cassette-off cam ⑥ on the positioning rod as in 3) and 4) above and assemble it on the right of the side plate ③.
- 6) After assembling, pull the rod out from the right side.

Note:

If a rod is not available, the holes can be lined up by eye.

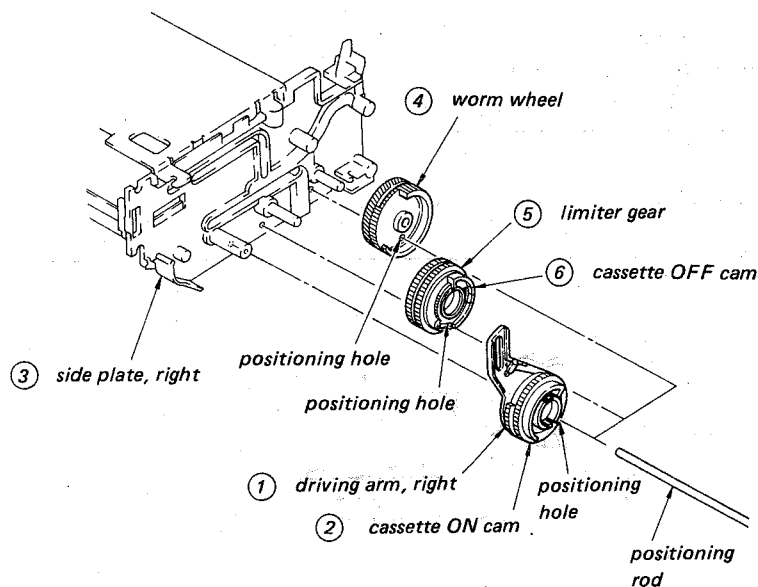


Fig. 3-18. Positioning of FL Cassette Compartment Worm Wheel

3-8. REMOVAL OF REEL BLOCK

- 1) Place the set upside down.
- 2) Remove four screws ①.
- 3) Remove the reel block ②.

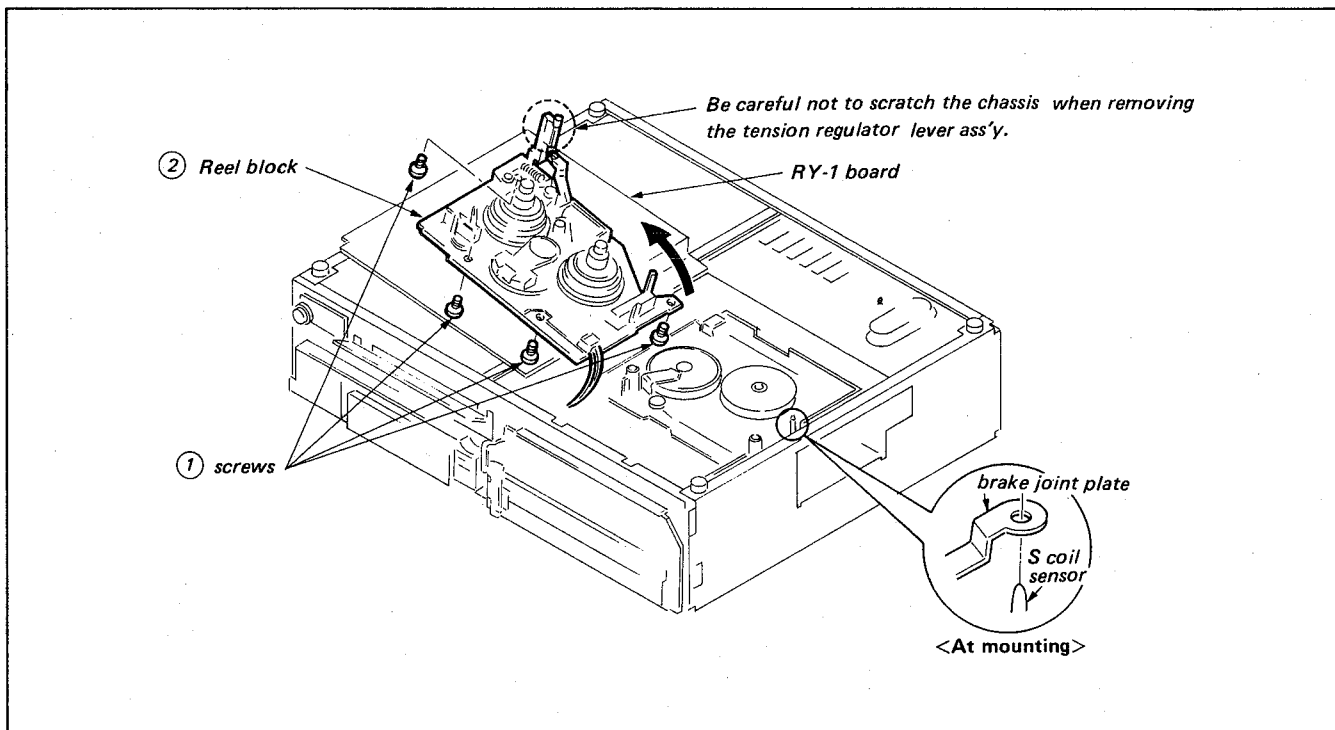


Fig. 3-19. Dismounting Reel Block

3-9. UNTHREADING CHECK

- 1) Press the EJECT button and unthread.
- 2) Check that the actuator for the unthreading end switch is not tripped as shown in Fig. 3-20. (Slowly rotate the internal gear by hand and verify by the click sound.)

* Refer to Paragraph 1-7-2 to thread manually.
Adjust according to Paragraph 3-15-2 if necessary.

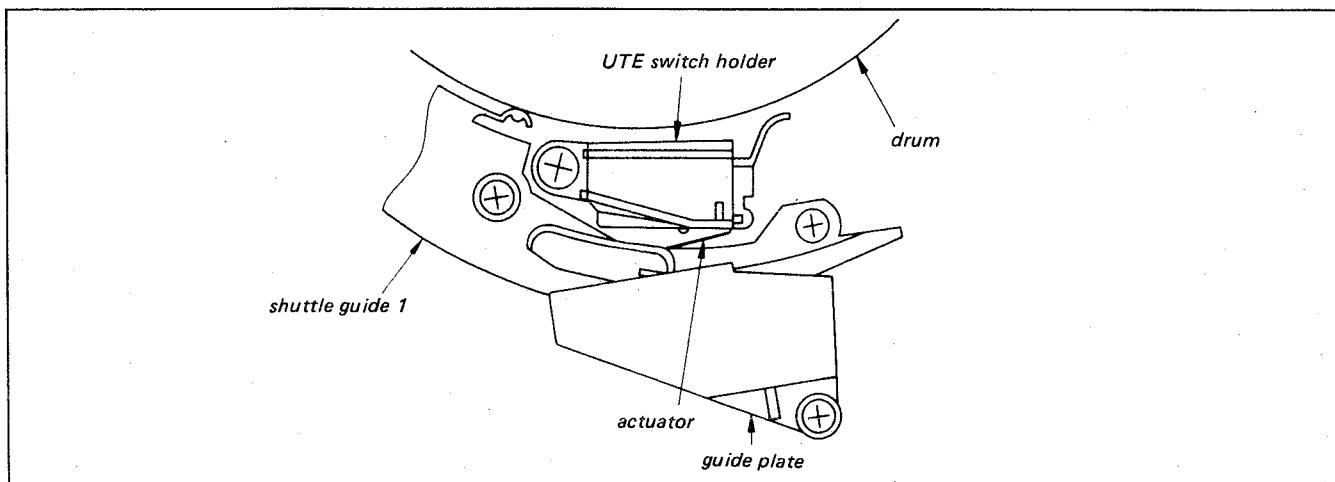


Fig. 3-20. UTE Switch

3-10. S THREADING RING REPLACEMENT AND ADJUSTMENT

3-10-1. Preparation for Removal of S Threading Ring

Remove ACE assembly, FE Head and Threading Motor.
(Fig. 3-21)

- 1) Unscrew the Phillips head continuous-thread stepped screw ①.
- 2) Remove the No. 6 guide nut ②, washer ③, spacer ④ and compression coil spring ⑤. Use a special notched screwdriver. (See Section 1-8, Tools And Fixtures Required)
- 3) Remove the two guide adjusting nuts ⑥ and the ACE assembly and FE head.

Caution:

ACE assembly and FE head are connected by a lead. Be careful when removing them. The compression coil spring underneath the ACE assembly does not have to be removed. However, be careful not to lose it.

- 4) Unscrew two screws ⑦ and remove the STOPPER ARM ASSEMBLY BLOCK ⑧.
- 5) Unscrew the two screws ⑨ and pull the threading motor assembly up to remove.

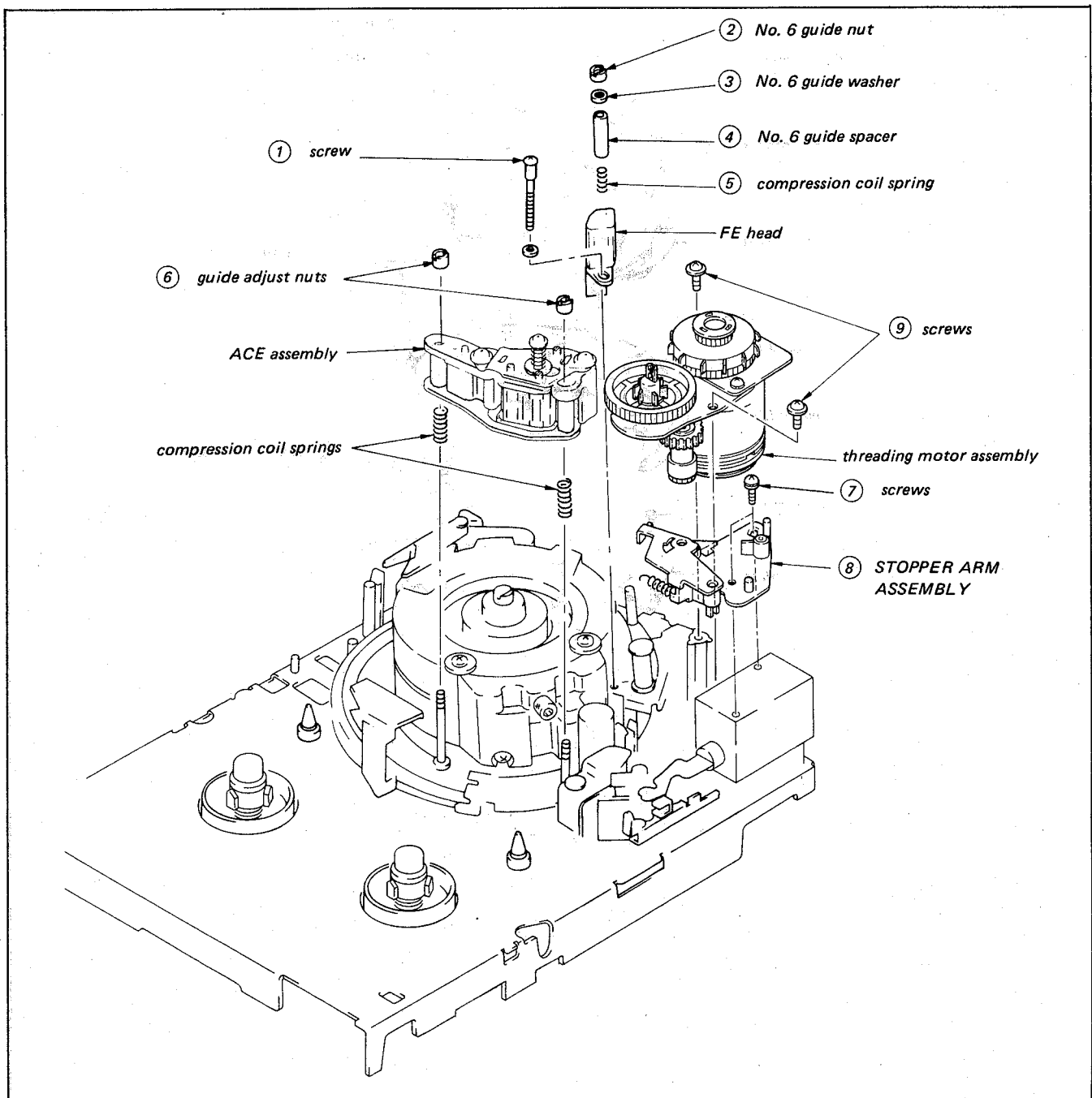


Fig. 3-21. Dismounting ACE Assembly, FE Head, and Threading Motor

[Removal of Other Parts] (Fig. 3-22)

- 1) Measure the gap between the upper drum and the adjust plate as for replacement of the drum assembly. (Fig. 3-5)
- 2) Unscrew the two screws ① and remove the tape guide ground plate ② and adjust plate ③.
- 3) Unscrew the two screws ④ and remove the tape holder assembly ⑤
- 4) Unscrew screw ⑥ and remove the guide plate ⑦
- 5) Unscrew the two screws ⑧ and five screws ⑨ to remove the shuttle guide (1-YA) ⑩ and (2) ⑪ as well as the slant base assembly ⑫
- 6) Unscrew screw ⑬ and remove the pin link liner plate ⑭

Caution:

When the guide plate is removed, do not thread or unthread with the shuttle guide mounted.

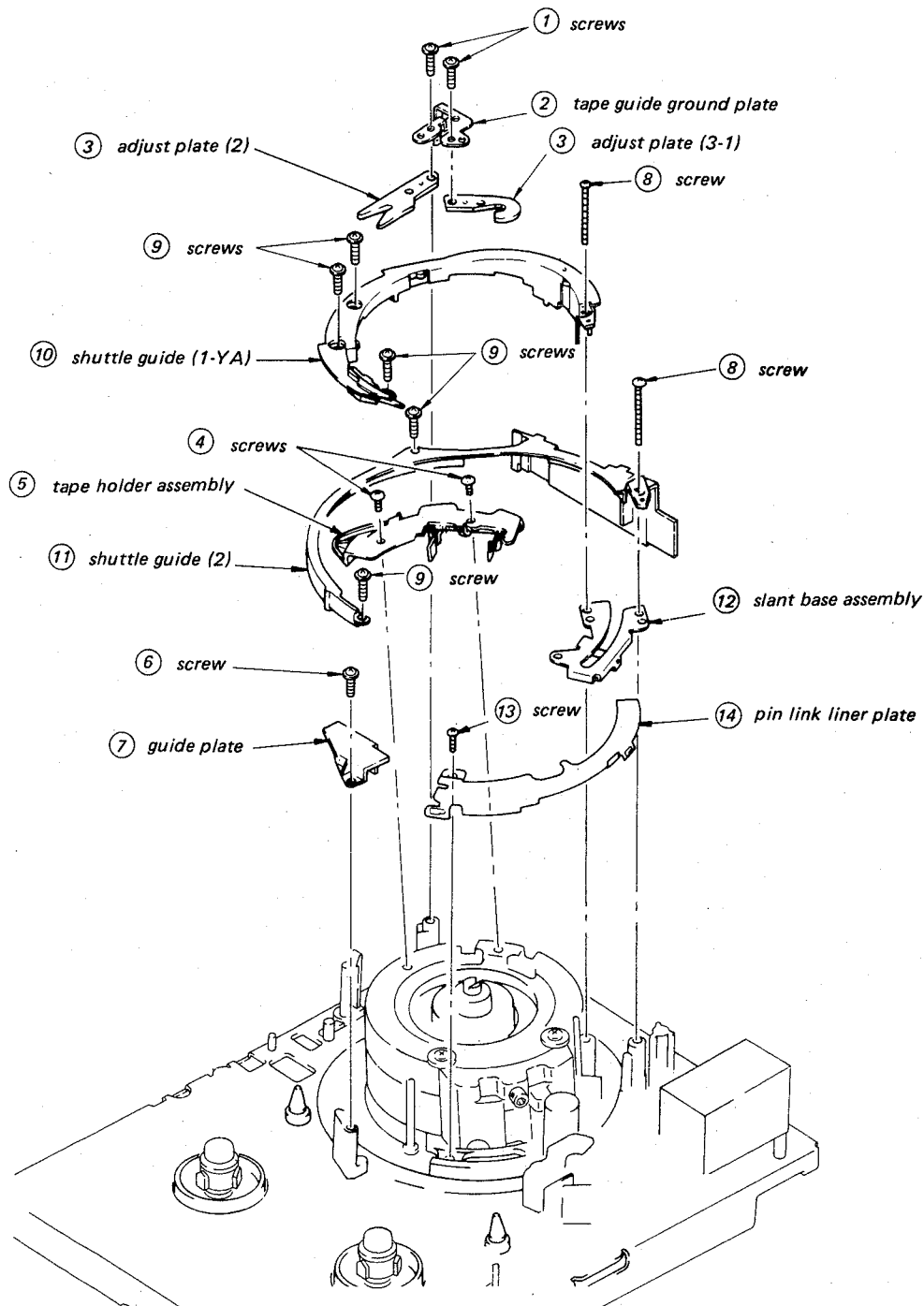


Fig. 3-22. Removing Other Parts

3-10-2. Removal of S Threading Ring (Fig. 3-23)

- 1) Remove the spring of the lock arm assembly. (Refer to Paragraph 3-15-1, Fig. 3-34)
- 2) Remove stop washers ① and ring rollers ②, ③.
- 3) Remove the UTE switch subassembly. (Refer to Paragraph 3-15-2, Fig. 3-38)
- 4) Unscrew screw ④ and remove the ring roller adjustment plate ⑤ and ring roller ⑥.
- 5) Remove the S threading ring ⑦.

Caution:

Do not use the same washer twice.

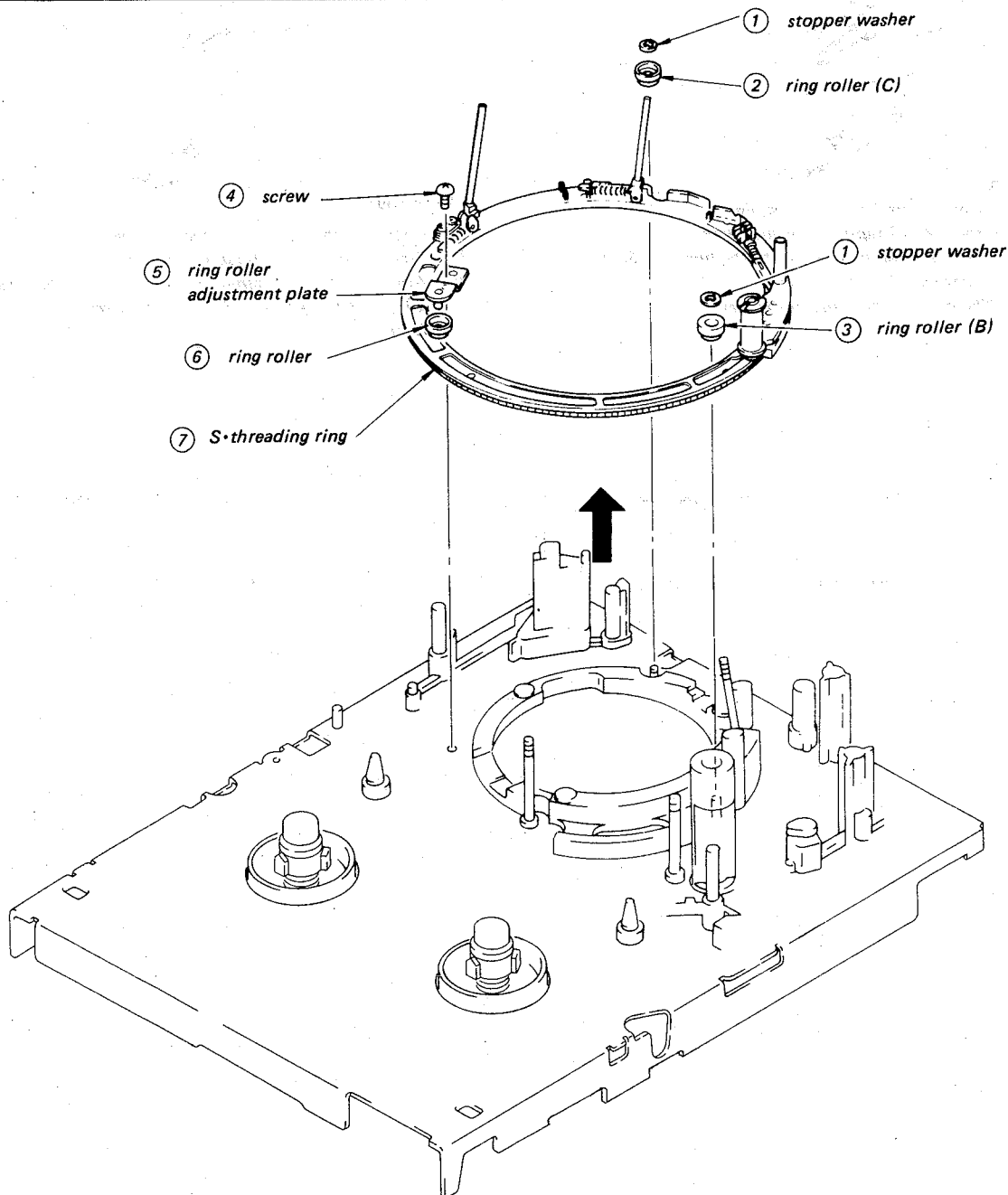


Fig. 3-23. Removing S Threading Ring

3-10-3. Removal of No. 2 Guide

- 1) Unscrew the screw (1x3) ①.
- 2) Unscrew the screw (1.4x3) ②.
- 3) Remove the No. 2 guide ③.

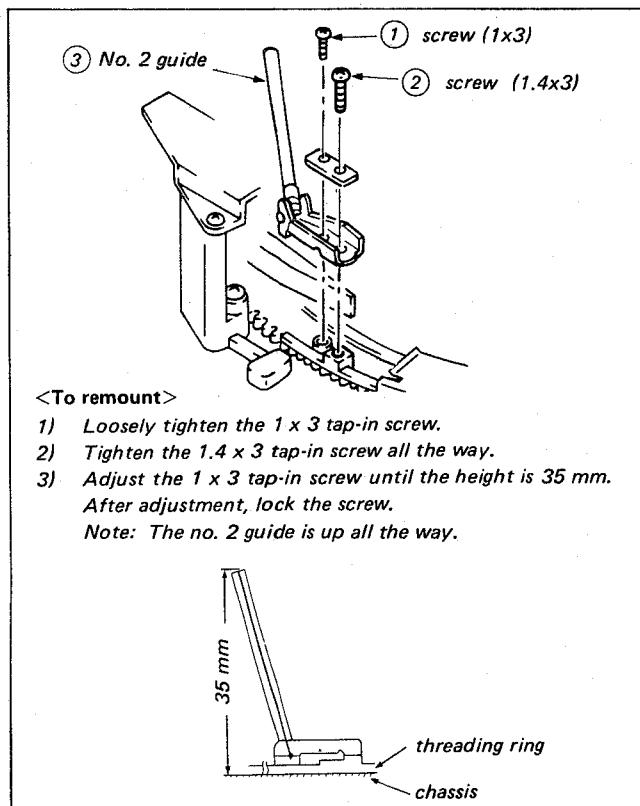


Fig. 3-24. Removal of No. 2 Guide

3-10-4. Removal of No. 3 Guide

- 1) Unscrew the screw (1x3) ①.
- 2) Unscrew the screw (1.4x3.5) ②.
- 3) Remove the No. 3 guide ③.

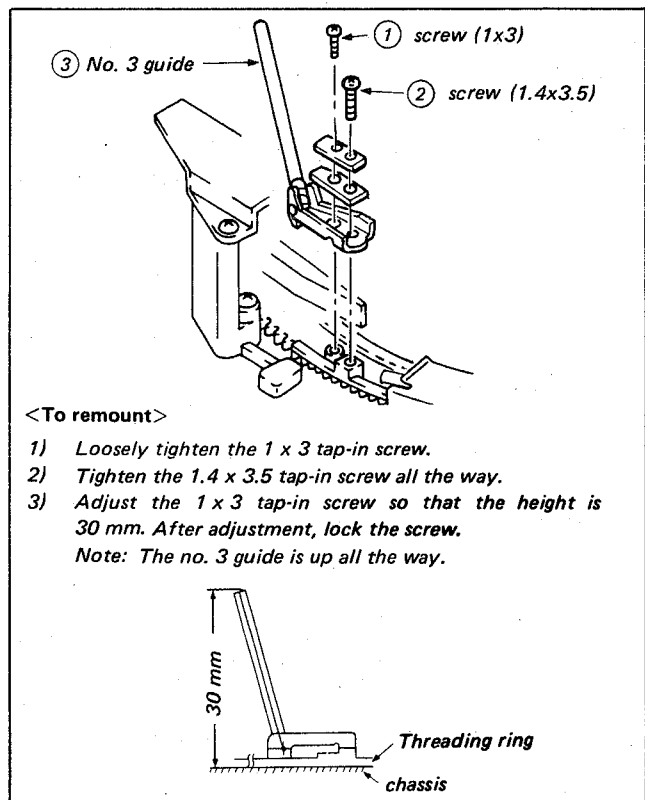


Fig. 3-25. Removal of No. 3 Guide

3-10-5. Checking Slider Stopper Mounting (Fig. 3-26)

- 1) Check that the drive gear is engaged.
- 2) Loosen screw ①, insert a spacer ($t = 0.2$) between the slider gear and slider stopper, then tighten screw ① while pushing in the directions of arrows A and B

Caution:

Make sure to push it in direction A to eliminate any play. The slider stopper rotates in the direction of arrow C when screw ① is tightened. Therefore, tighten the screw while holding it with a blade-tip screwdriver.

3-10-6. Replacement of S Threading Ring (Fig. 3-27)

- 1) Mount the S threading ring.
- 2) Set the slider gear assembly in the unthreading complete position.
(Insert a 0.5 mm spacer between the slider stopper and slider gear as shown in Section A.)
- 3) Rotate the S threading ring in the direction of the arrow a and align the mechanism chassis hole ($\phi 3$) and S threading ring hole ($\phi 1.5$) of the section B.
- 4) Mesh the drive gear assembly with the S threading ring and fit them into the mechanism chassis.
- 5) Reassemble after repositioning the gearing of the drive gear assembly and S threading ring gear if the hole positions do not match.

Note:

Adjust the ACE assembly in accordance with Section 4 for tape path adjustment after changing and mounting the S threading ring.

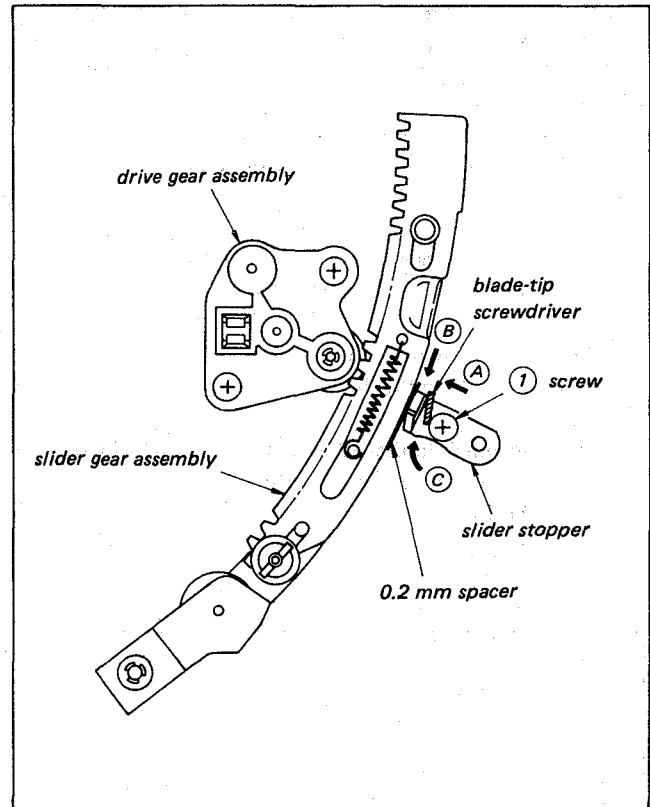


Fig. 3-26. Mounting Slider Stopper

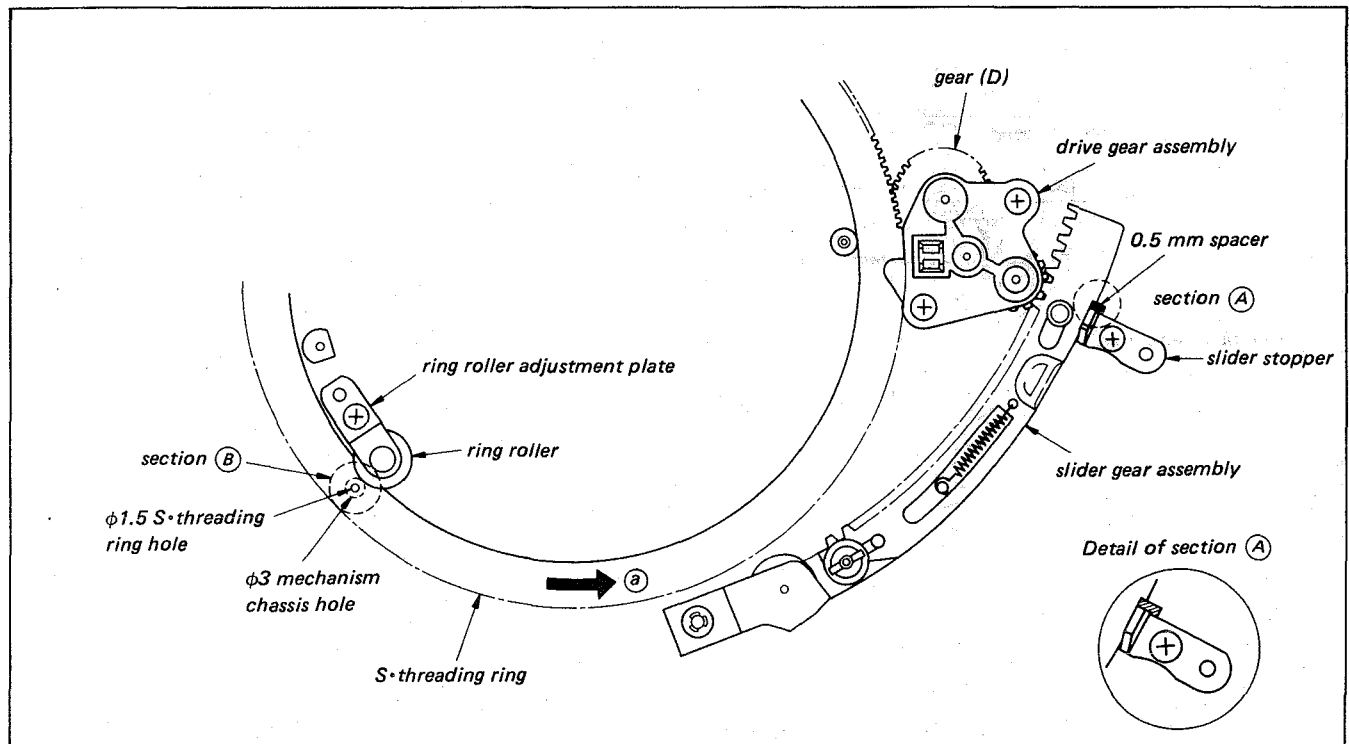


Fig. 3-27. S threading Ring Position Adjustment

3-11. CHECK AND ADJUSTMENT OF PINCH PRESS LIMITER CLEARANCE

[Check Procedure]

- 1) Set up a threading completed state.
- 2) Check that the clearance "t" of the pinch press limiter in Fig. 3-28 is 0.4 — 0.6 mm. If not, adjust as follows:

[Adjustment Procedure]

- 1) Loosen screw ① in Fig. 3-28 with the pinch solenoid held in.
- 2) Move the pinch limiter adjust plate (shaded in the diagram) fully in the direction of arrow ③. The clearance "t" at this time is 0.
- 3) Push the pinch limiter adjust plate in the direction of arrow ④ as shown at section A using a blade-tip screwdriver, until the clearance "t" is 0.4 — 0.6 mm. (Use $\phi 0.4$ and $\phi 0.6$ gauges for clearance adjustment)
- 4) Tighten screw ① and lock it.

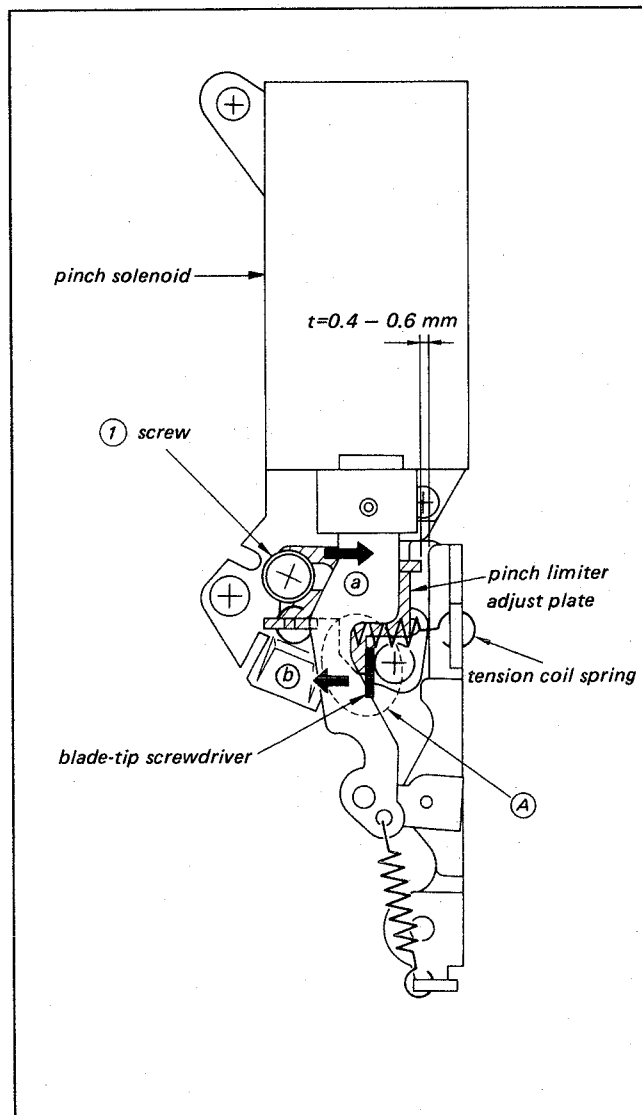


Fig. 3-28. Pinch Press Limiter Clearance Adjustment

3-12. BRAKE PLUNGER POSITION ADJUSTMENT

- 1) Loosen the screw ① securing the brake plunger.
- 2) Adjust the installation position so that the suction stroke of the brake plunger becomes 2 mm.

When the plunger is in the sucked state, S brake should be separated from S reel table.

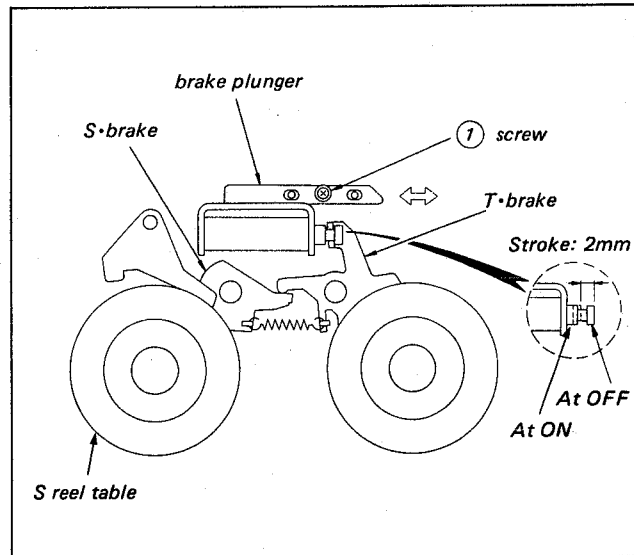


Fig. 3-29. Brake Plunger Position Adjustment

3-13. SOFT BRAKE ADJUSTMENT

[Adjustment Method]

- 1) Place a tension gauge (SL-0011) on the S reel base and hook a sector type gauge as shown in Fig. 3-30.
- 2) Adjust by moving the tension coil spring ① in the direction of the arrow A until the sector type gauge reading is 8 g when the FF mode is set up. (See Fig. 3-31)

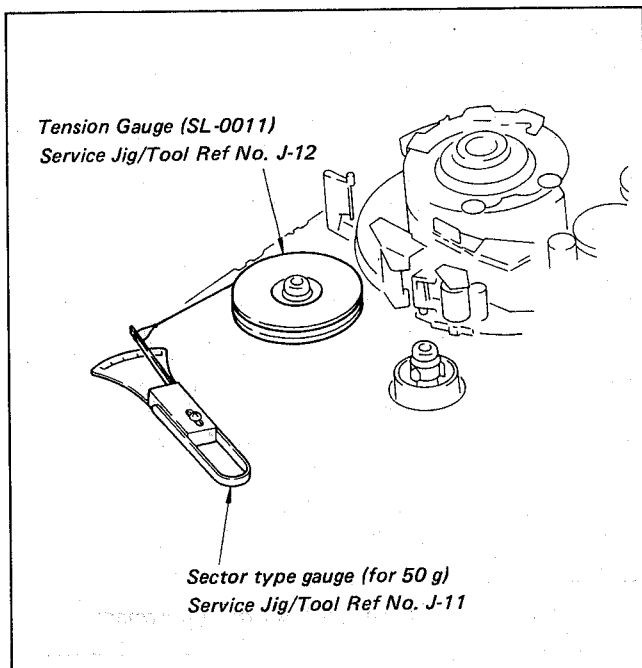


Fig. 3-30. Soft Brake Adjustment-1

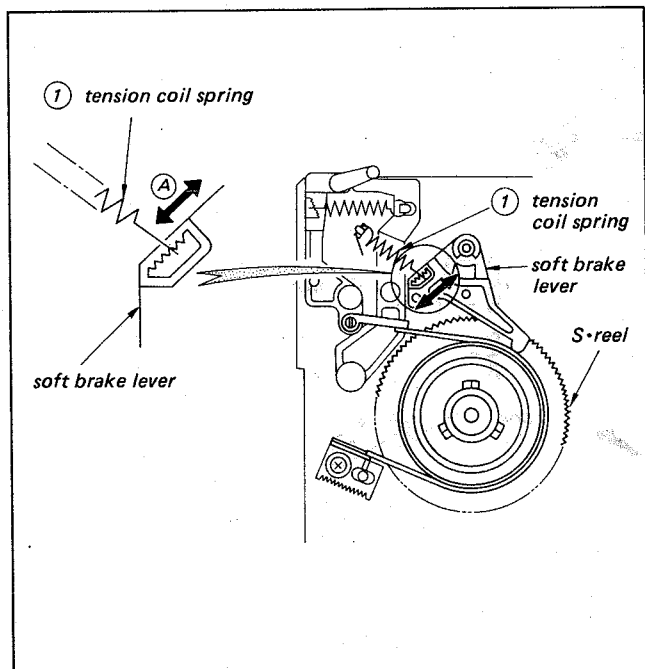


Fig. 3-31. Soft Brake Adjustment-2

3-14. TENSION REGULATOR LEVER POSITION ADJUSTMENT

[Adjustment Method]

- 1) Set up the PLAY Mode.
- 2) Loosen the screw ③ and adjust by moving the tension regulator band assembly ④ in the direction of the arrow A until the tape guide pin (No. 1 guide) of the tension regulator lever assembly ① is positioned inside the outer circumference of the shuttle guide (2) ② as shown in Fig. 3-32.
- 3) After making the adjustment, tighten the screw ③ carefully in order not to move the tension regulator band assembly ④.

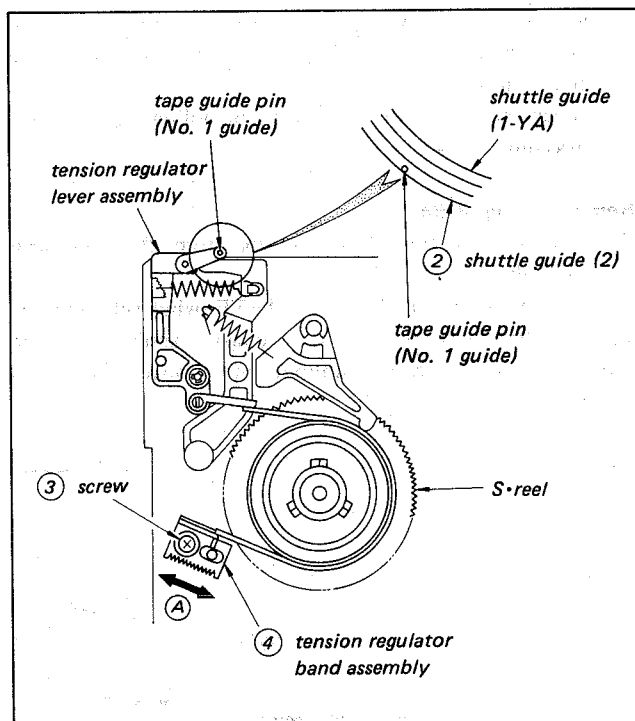


Fig. 3-32. Tension Regulator Lever Position Adjustment

3-15. CHECK AND ADJUSTMENT OF MICROSWITCH POSITION

3-15-1. Check and Adjustment of Threading End Switch (TE Switch) Position

[Check Procedure] (Fig. 3-33)

Rotate the S threading ring by hand and check that the TE switch turns on and off with a clicking noise while the lock roller is moving within the upper 2/3 of the straight portion ℓ of the recess (A) in Fig. 3-33 on the ring. If not, adjust as follows.

[Adjustment Procedure]

- 1) Adjust the lock roller to the position caving from the notch rim tip on the S threading ring, rotate the cam shaft using a blade-tip screwdriver in the direction of the arrow, and secure the cam shaft when the TE switch is turned on (a click tone is audible).
- 2) Check the results of the adjustment following the check procedure above.

[Removal] (Fig. 3-34)

- 1) Unhook the tension coil spring from the lock arm assembly.
- 2) Unscrew screw (1) and remove the TE switch subassembly.
- 3) Push the hook on the main chassis assembly in the direction of the arrow to unhook, and remove the lock arm assembly.

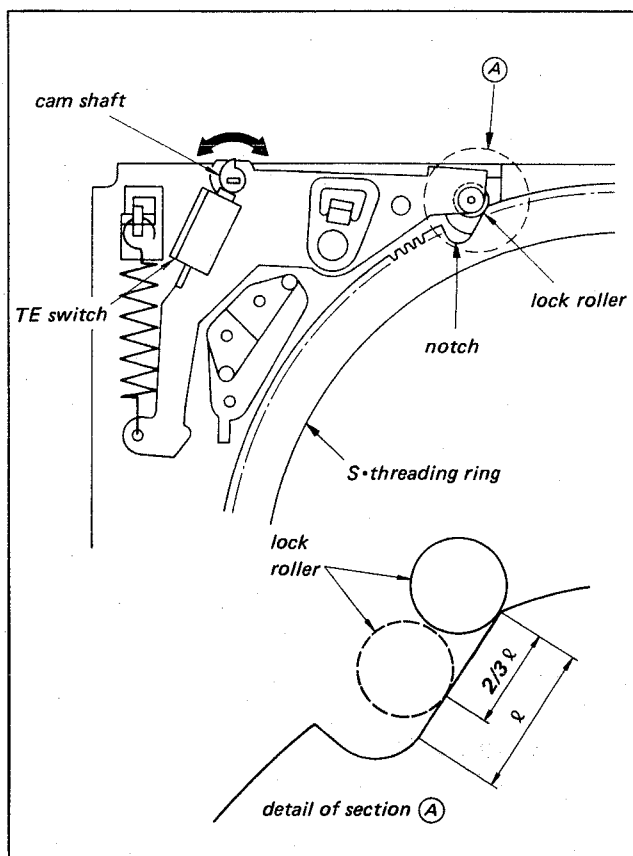


Fig. 3-33. TE Switch Position Adjustment

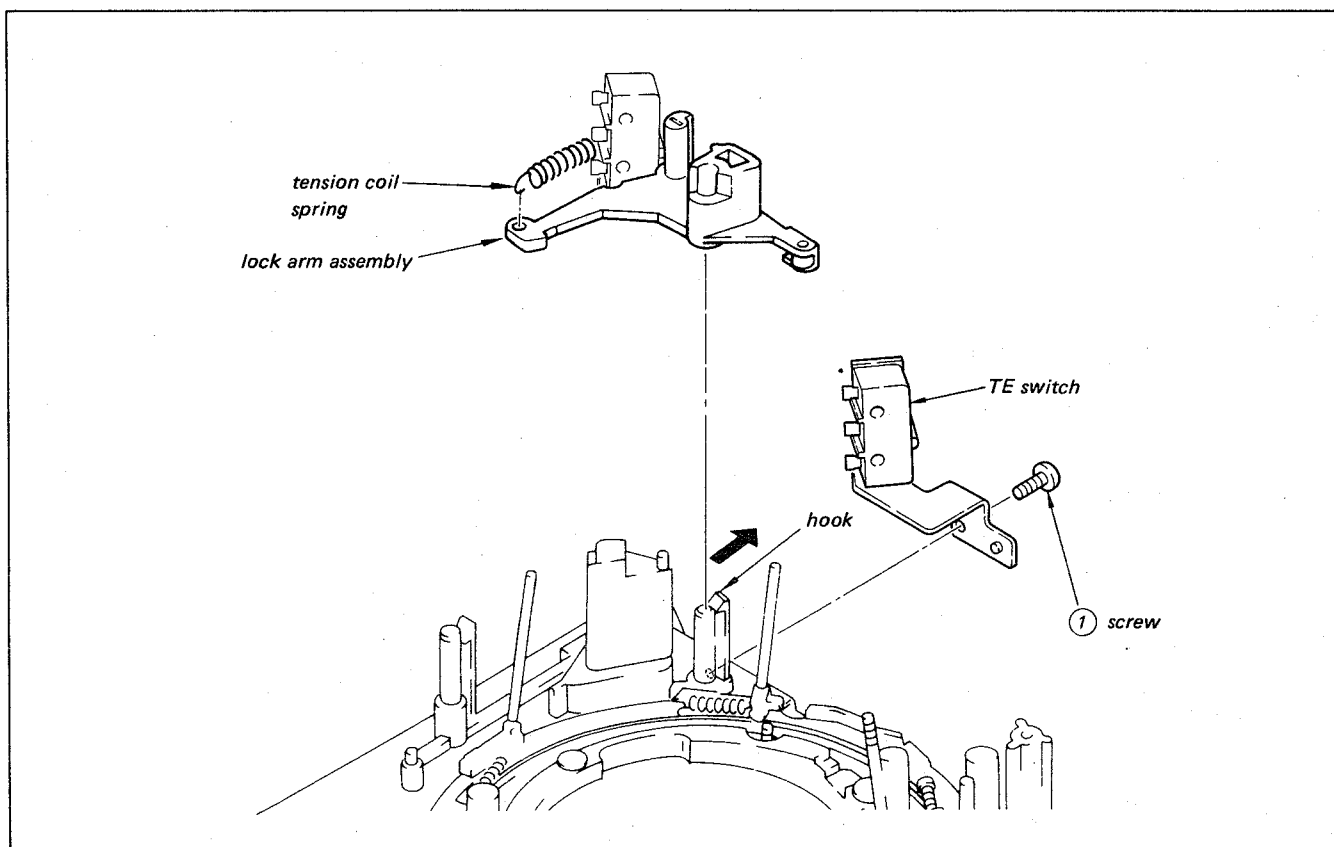


Fig. 3-34. Removing TE Switch and Lock Arm Assembly

3-15-2. Check and Adjustment of Unthreading End Switch (UTE Switch) Position

[Check Procedure]

Rotate the S threading ring by hand. Verify that the switch trips when a pin of $\phi 1.2$ is inserted at section (A) in Fig. 3-35 after the UTE switch arm roller assembly has dripped into the UTE switch cam groove. Verify that the switch does not trip when a pin of $\phi 0.6$ is inserted.

[Adjustment Procedure]

- 1) If the switch does not trip when the $\phi 1.2$ pin is inserted, loosen small screw ① and adjust by moving in the direction of the arrow little by little.
- 2) The switch actuator is bent as shown in Fig. 3-36 when the switch turns on after inserting a $\phi 0.6$ pin. Check the adjustment.

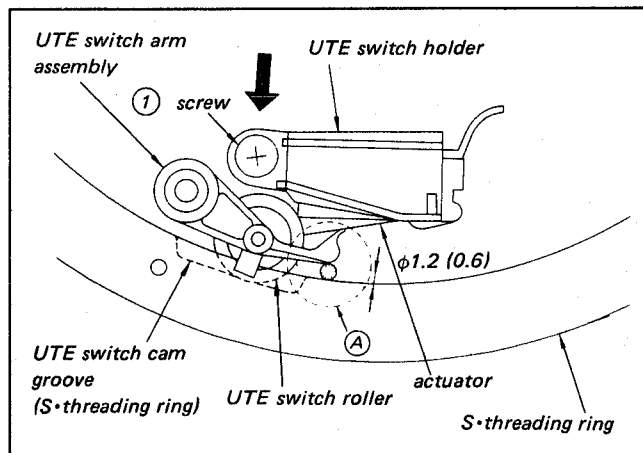


Fig. 3-35. UTE Switch Position Adjustment

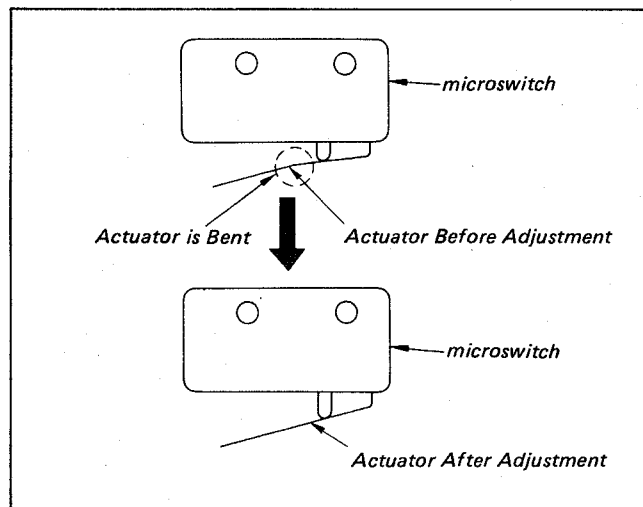


Fig. 3-36. Actuator Adjustment

Caution:

Insert the $\phi 1.2$ and 0.6 pins into their correct positions as shown in Fig. 3-37. (Even when the clearance at the entrance is 1.2 mm on construction, depending on the pin insertion positions as shown in Fig. 3-37, the clearance inside is less than 1.2 mm).

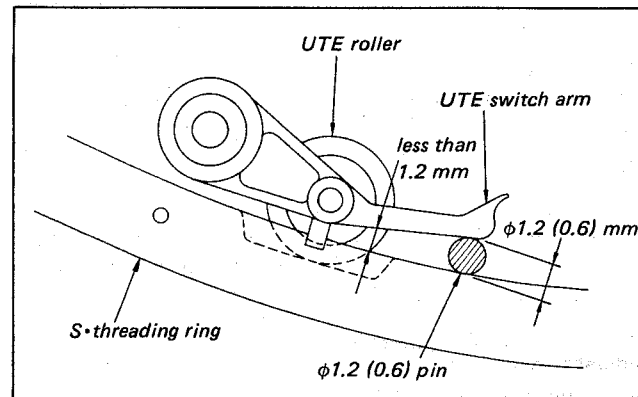


Fig. 3-37. Pin Position During Checking

[Removal]

- 1) Unscrew screw ① as shown in Fig. 3-38.
- 2) Release the switch hook ② from the chassis and remove the switch body while pushing the actuator to the "ON" position.

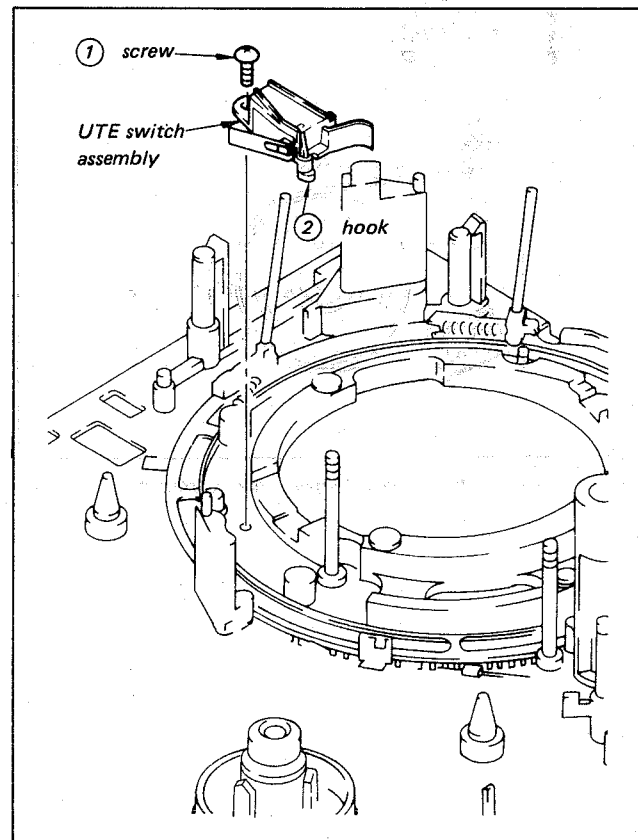


Fig. 3-38. Removing UTE Switch

3-16. FORWARD/BACK TENSION MEASUREMENT

Perform this measurement using torque cassette SL-0003C according to the procedure below.

[Procedure]

- 1) Remove the upper panel so that the tape path is visible.
- 2) Insert the torque cassette and set PLAY mode.
- 3) Read the S reel side meter after the indicator has made about one revolution.

Specified Value $30 \pm 5 \text{ g} \cdot \text{cm}$

[Note:

- i) Be sure the set is level when measuring.
- ii) After measuring, the tape may go slack if the STOP button is pressed, so put the set into forward mode first, to remove the slack, then the tape can be ejected.

[Adjustment]

Adjust the position of the tension coil spring on the tension regulator lever assembly in the direction of the arrow (A) so that measured values become $30 \pm 5 \text{ g} \cdot \text{cm}$ to conform to the standard.

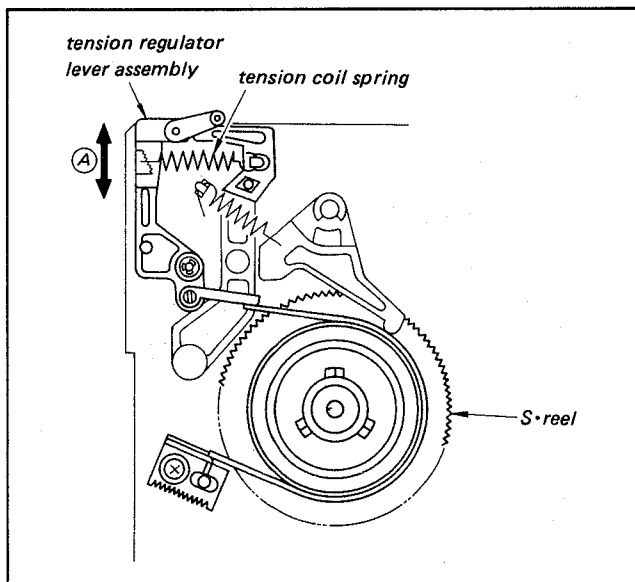


Fig. 3-39. Back Tension Measurement

3-17. FORWARD TORQUE ADJUSTMENT

Perform this measurement using torque cassette SL-0003C according to the procedure below.

[Procedure]

- 1) Insert the torque cassette and set RECORD mode.
- 2) Adjust RV309 of SS-16 board so that the reading of the take-up side becomes $80 \pm 5 \text{ g} \cdot \text{cm}$.

[Note:

Upon RECORD mode, auto shutoff may occur, entering STOP mode. This is due to the construction of the torque cassette (the action of the built-in spring). The spring acts when the take-up reel table stops momentarily. In this case, either readjust by pushing the REC button, or adjust as follows.

1. Unplug connectors CN310 and 311 from SS-16 board.
2. Connect pin (39) of IC301 (TP-402) and pin (2) of CN 310 with a 47 kohm resistor.
3. Adjust.

SECTION 4

TAPE PATH ADJUSTMENT

4-1. TRACKING ADJUSTMENT

This adjustment has significant effect on picture quality in each mode and tape interchangeability, so please perform it very carefully.

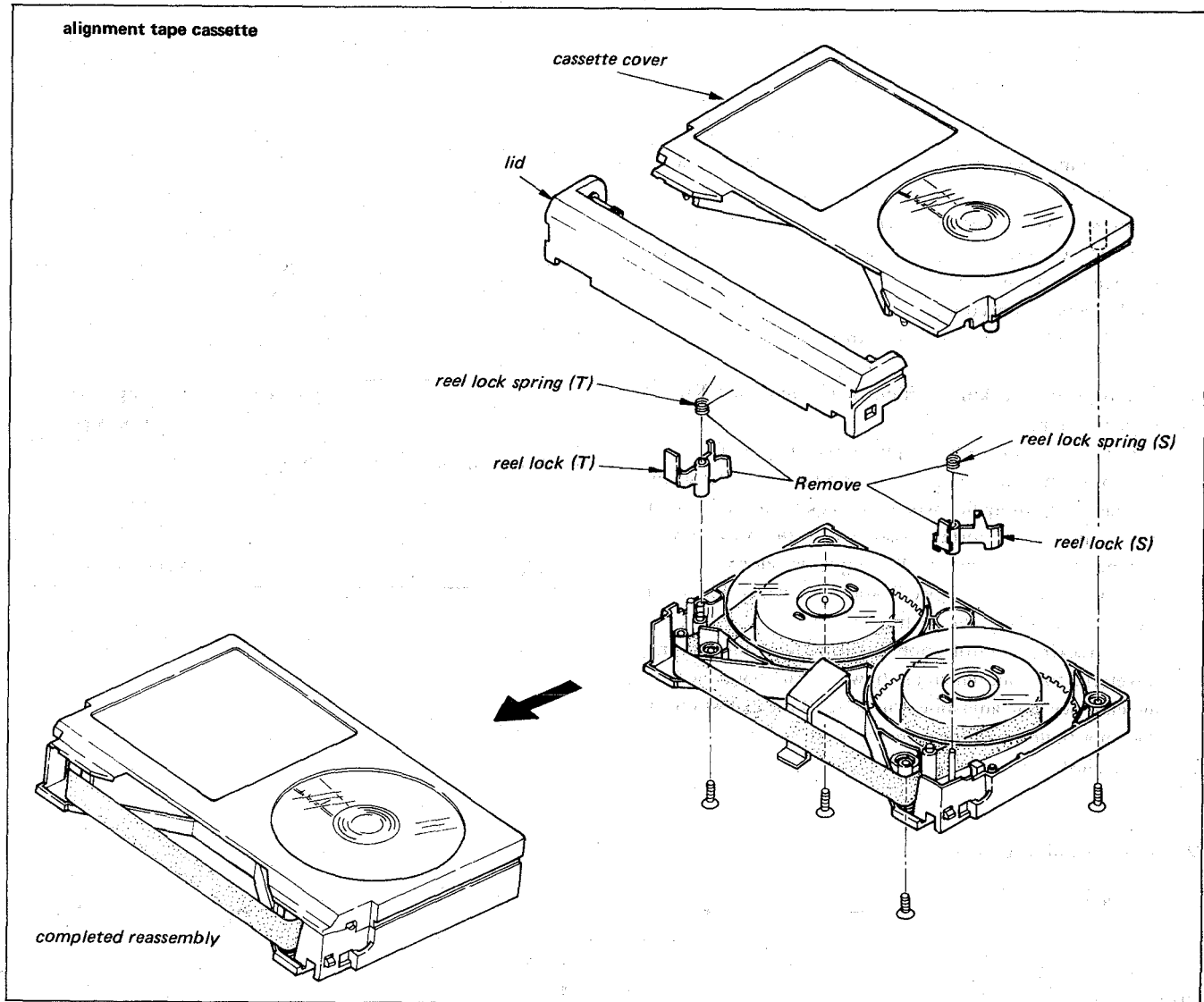


Fig. 4-1. Cassette Holder Remodeling

4-1-1. Preparation

- 1) When modifying alignment tape KR5-2H, use caution not to dislodge the tape reels from their correct position. Refer to Fig. 4-1 and remove the four screws that secure the upper cover to the lower cover.
Remove the upper cover and lid. Separate the lid and lid tension spring from the upper cover. Remove the two reel lock springs (T and S) and the two reel locks (T and S). Remount only the upper cover, being certain that it is properly mated with the lower cover. Secure the covers with four screws. NOTE — If the reel locks, and related springs are not removed from the cassette, the tape will load but will not thread. In this case the cassette will be ejected from the VCR approximately eight seconds after being loaded into the VCR.
- 2) Clean the tape contact surfaces (tape guides, drum, capstan shaft, pinch roller, ACE FE head surface) with chamois dampened with methanol.
- 3) Oscilloscope connections:
1ch: CN2-5 pin (RY-1 board)
2ch: CN2-3 pin (RY-1 board)
- 4) Play back the tracking portion of the modified KR5-2H alignment tape.
- 5) Confirm that the RF output waveform is flat, with maximum amplitude. (The waveform should increase and decrease, remaining flat, when the tracking control knob is turned back and forth.) Also, when the waveform is maximum, confirm that the RF output waveform variation and contact satisfy the specifications shown in Fig. 4-2. If they do not, follow the instructions in 6).
- 6) If the tracking control knob is turned and the entrance waveform does not flatten as shown in Fig. 4-3(a), perform the entrance side adjustment in 4-1-2. If the exit waveform does not flatten as shown in Fig. 4-3(b), perform the exit side adjustment in 4-1-3.

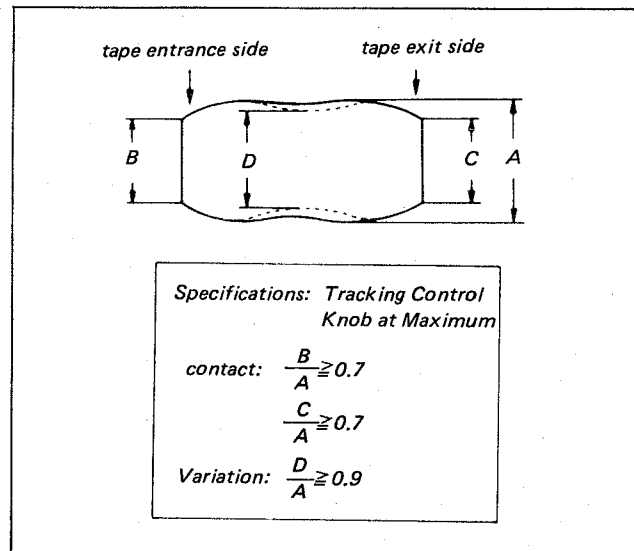
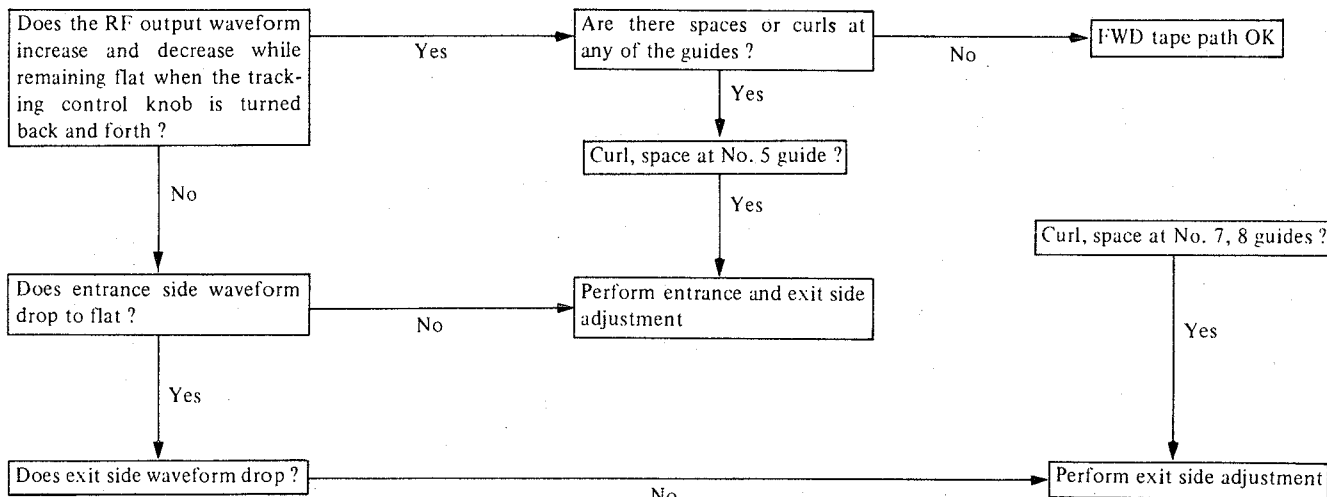


Fig. 4-2.

	BOARD	CONNECTOR & PIN NO.
RF Output Waveform	RY-1	CN2-5
External Trigger	RY-1	CN2-3
Audio Out	AM-3	CN501-1
Video Out	YC-25	VIDEO OUT

Waveform Confirmation



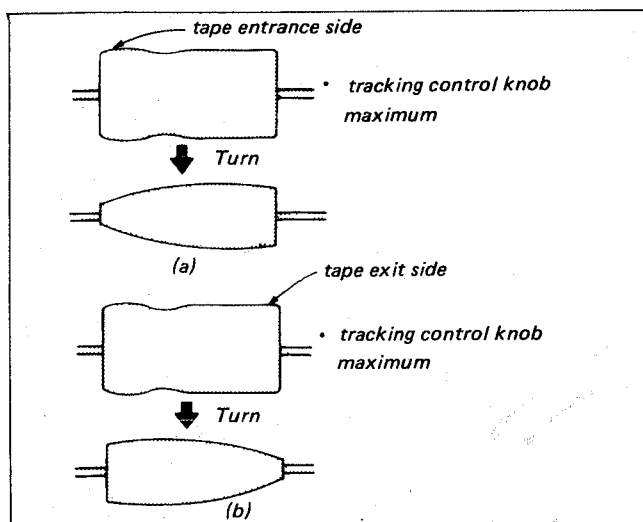


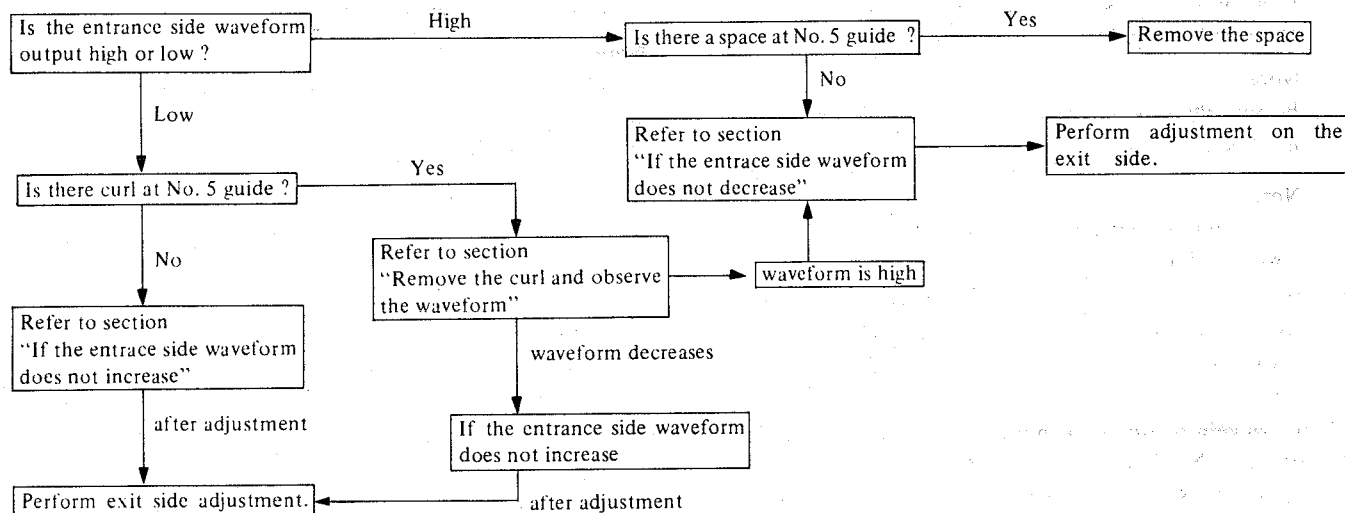
Fig. 4-3.

Note: After the indicated tape path adjustments that follow have been successfully completed using normal playback speed, operate the VCR in the Speed Search mode and look for curl at the tape guides. Readjust them if necessary. Then, finally, playback a regulator L830 tape as a check-up. See Section 4-4.

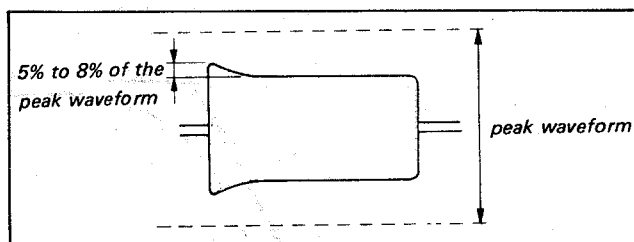
4-1-2. Entrance Side Adjustment

Always perform the exit side adjustment as well as the entrance side adjustment. Fig. 4-4 illustrates the guides and adjustment locations.

Entrance Side Flow Chart



- 1) Turn tracking control knob counterclockwise to drop RF output waveform to about 60% of maximum.
- 2) Turn No. 6 guide counterclockwise to free tape transportation to the drum. Use a special notched screwdriver. (See Section 1-8, Tools And Fixtures Required)
- 3) Loosen No. 5 guide lock screw ①, turn No. 5 guide so that the entrance side waveform is almost flat, as shown in the figure below, and tighten lock screw ①. (See Fig. 4-5)



Note:

Be sure that the waveform remains as shown in the figure after tightening the lock screw ①.

- 4) Next lower No. 6 guide and flatten the waveform.
- 5) Push the tape down between No. 4 and No. 5 guides by hand, and confirm that the entrance side RF waveform returns to the original state after being lowered. If the waveform is not as illustrated, or if the waveform does not flatten, or takes too much time to flatten after the entrance side tape is pushed down, follow the procedure below to adjust.
- 6) Check No. 5 guide for space and curl. If space or curl exists, follow the appropriate adjustment procedure.

Note:

Be sure that there is tape tension upper and lower balance between No. 3 — No. 4 — No. 5 guides. Perform No. 3 or No. 5 guide lateral adjustment if necessary.

Note:

Upon failing to obtain the waveforms shown above, press down the tape at the entrance side, adjust as indicated below when a long time is needed for the waveform to return to the horizontal, or when it does not return at all.

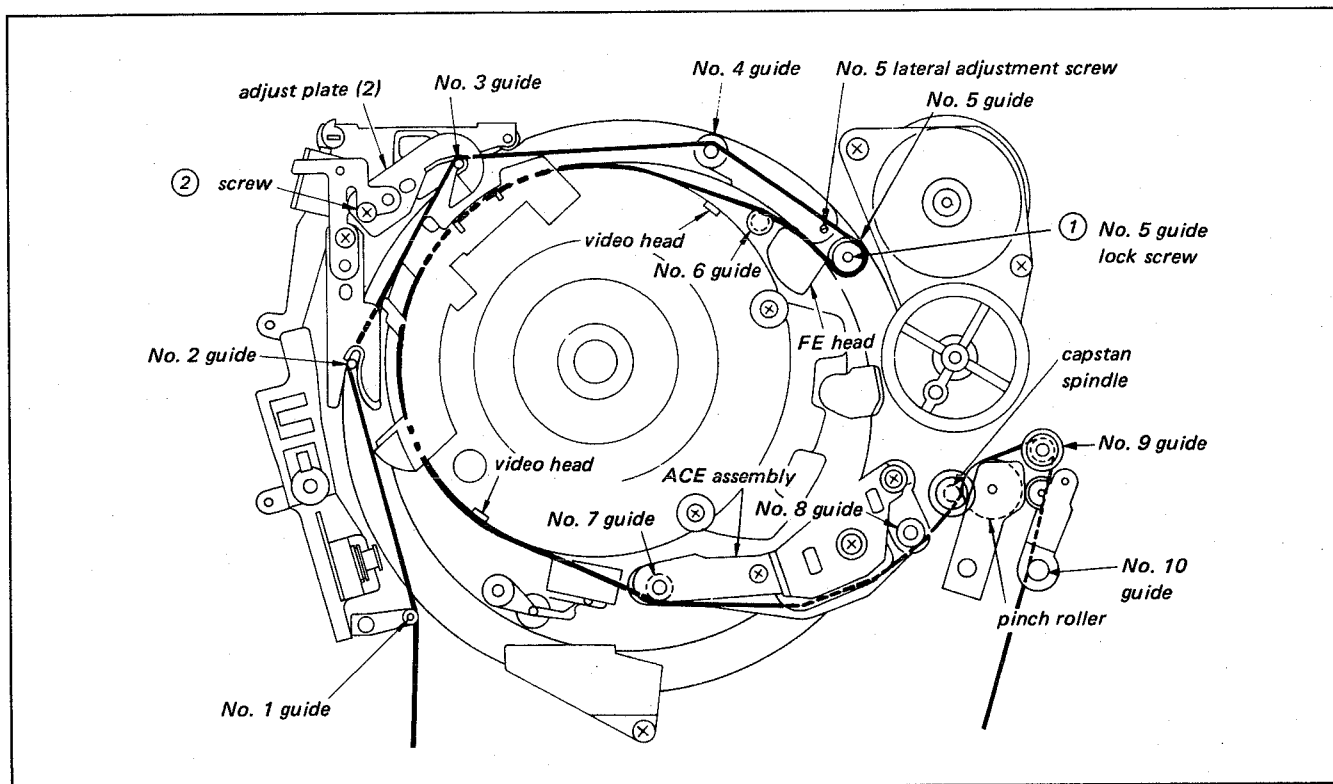


Fig. 4-4. Tape Guide Layout

[If the waveform entrance output does not increase]

- 1) Check to make sure tape upper and lower tension is equal between No. 3 — No. 4 — No. 5 guides. If it is not, perform No. 3 or No. 5 guide lateral adjustment.

Note:

Be sure there is no space at No. 4 guide lower flange.

- 2) Raise No. 4 guide lower flange to raise entrance output.

Note:

No. 4 guide lower flange may be raised 0.4 mm from its lowest position.

- 3) If the waveform does not increase in step 2), turn No. 5 lateral adjustment screw slightly (less than 360°) counterclockwise.

[If the waveform entrance output does not decrease]

- 1) Move the No. 3 guide adjust plate away from the drum, and tighten screw ② at the point just before the lower tension of the tape loosens.
- 2) If the tape is touching No. 4 guide lower flange, lower the flange. If it is floating, adjust No. 5 guide laterally.

[If there is space at No. 5 guide]

Turn No. 4 guide counterclockwise to raise the tape and remove the space at No. 5 guide.

Note:

Be careful not to create a large space at the bottom of No. 4 guide.

[If there is curl]

- 1) When there is a space at the bottom of No. 4 guide:
Lean the adjust plate of No. 3 guide toward the outside until the point just before the lower tape tension loosens.
- 2) When there is curl but no space at the bottom of No. 4 guide:
 - i) Confirm that No. 4 guide is not raised too high. Turn clockwise to lower if necessary.
 - ii) If this does not solve the problem, tighten No. 5 guide lateral adjustment screw by turning clockwise until the curl disappears.

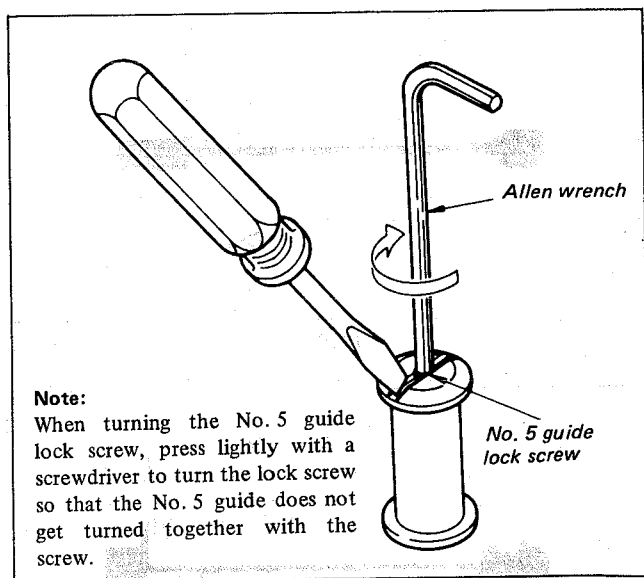


Fig. 4-5.

4-1-3. Exit Side Adjustment

- 1) Turn the tracking control knob counterclockwise to lower the RF output waveform to about 60% of the maximum.
- 2) Raise No. 7, 8 guides to free the tape transportation, and check the waveform. (This waveform is called "exit free waveform".)

Note:

Be careful not to raise the guides too much. They should be raised about 0.3 mm, and also, the tape should not touch the ACE head bottom flange. (Fig. 4-6)

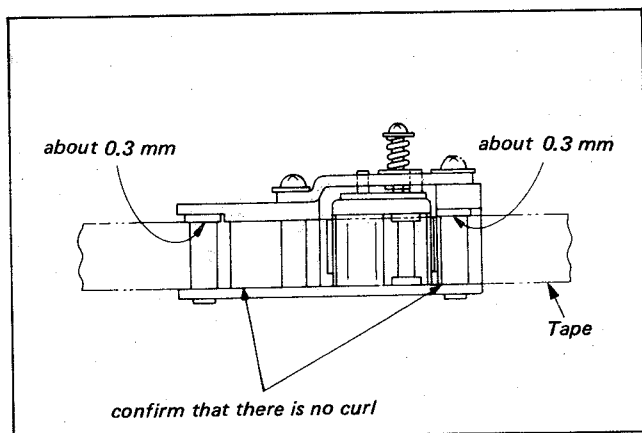


Fig. 4-6.

- i) If the exit free waveform is within the range illustrated in Fig. 4-7(a), (b), proceed with exit side adjustment.
- ii) If it is not within the specified range, follow the adjustment procedure in 4-3.

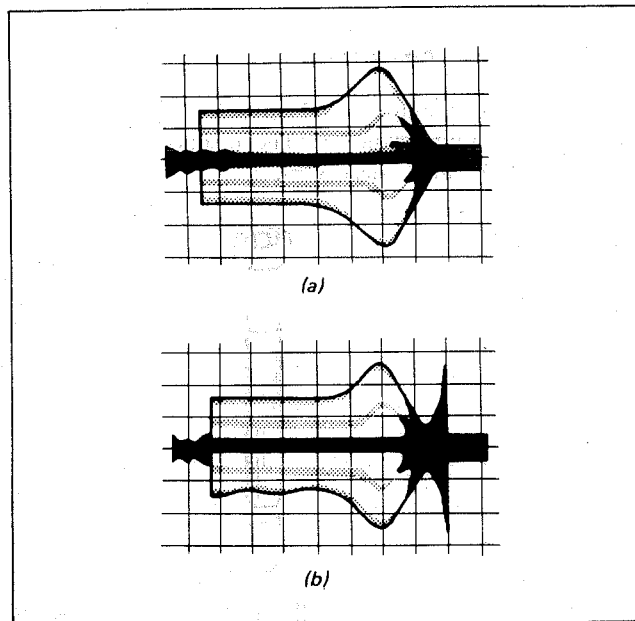


Fig. 4-7.

- 3) Flatten the waveform with No. 7 guide, and match No. 8 guide to the tape. (Lower the guide to the point just before the waveform changes, and where there is no curl.) At this time, the exit side waveform may rise slightly, so lower No. 7 guide again to flatten it, and match No. 8 guide to the tape.
- 4) Confirm that there is no curl at No. 7, 8 guides in forward mode.
- 5) Confirm that curl and space do not appear at No. 8 guide in reverse mode. If curl or space appears, adjust with No. 9 guide.

4-2. ADJUSTMENT AFTER REPLACEMENT OF THE ACE ASSEMBLY

Perform the following adjustments after removing or replacing the ACE assembly.

4-2-1. Tracking Adjustment

- 1) Position the parallel plate (Fixture, SL-0657) at shown in Fig. 4-8, and turn audio head lateral adjustment screw ① to adjust the audio head vertically.

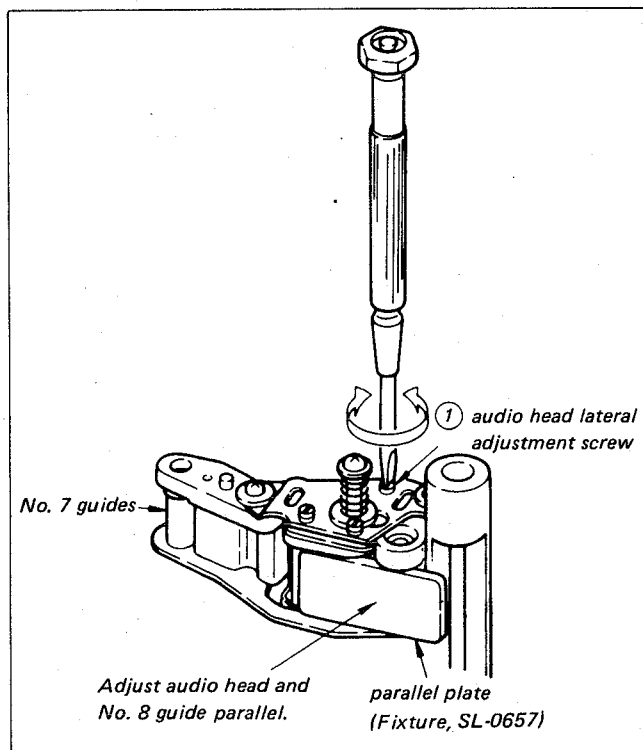


Fig. 4-8.

- 2) Turn the tracking control knob counterclockwise to lower the RF output waveform to about 60% of the maximum.
- 3) Play back the tracking portion of the alignment tape KR5-2H, raise No. 7, 8 guides about 0.3 mm, and check the exit free waveform of the RF output waveform.

Note:

Be sure that the tape does not touch the bottom flange of the ACE assembly.

- i) If the waveform is within the range illustrated in Fig. 4-7(a), (b), proceed with the adjustment.
- ii) If the exit free waveform appears as shown in Fig. 4-9, turn the ACE lateral adjustment screw clockwise until the waveform is within the range illustrated in Fig. 4-7(a), (b).
- iii) If the exit free waveform appears as shown in Fig. 4-10, turn the ACE lateral adjustment screw counterclockwise to obtain the waveform shown in Fig. 4-9, then turn clockwise again until the waveform is within the range shown in Fig. 4-7.

- 4) Turn the No. 7 guide to flatten the waveform, and match the No. 8 guide to the tape. (Lower the guide until the point just before curl appears at No. 8 guide flange.)
- 5) If the RF output waveform is as shown in Fig. 4-9, where the exit side is not flat, lower No. 7, No. 8 guides again to flatten it.

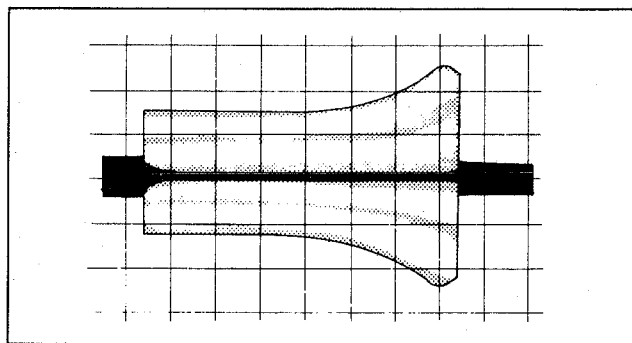


Fig. 4-9.

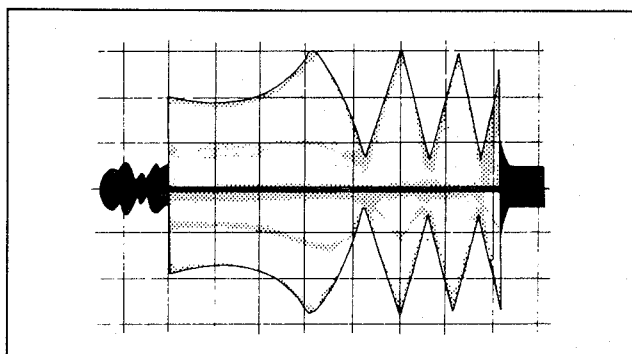


Fig. 4-10.

4-2-2. Audio Head (ACE Assembly) Azimuth Adjustment

- 1) Connect the oscilloscope as follows:
CN501.....1 pin (AM-3 board)
Play back the 5 kHz portion of the alignment tape.
- 2) Turn the azimuth adjustment screw (Fig. 4-11) so that the amplitude of the 5 kHz waveform is maximum.

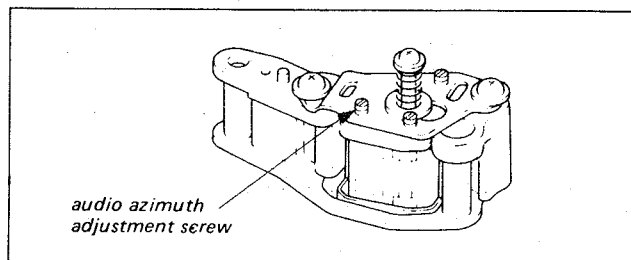


Fig. 4-11.

4-2-3. CTL Head (ACE Assembly) Position Adjustment

This adjustment is both mechanical and electric: mechanically, it is the adjustment of the CTL head position, and electrically, it is the tracking control center adjustment. The procedure involves performing the electrical adjustment first, then the head position adjustment.

- 1) Connect the oscilloscope as follows:
 1ch: CN2.....5 pin (RY-1 board)
 2ch: CN501....1 pin (AM-3 board)
 External trigger: CN2.....3 pin (RY-1 board)
 - 2) Play back the tracking portion of the alignment tape.
 - 3) Turn the tracking control knob back and forth, and confirm that the output waveform level is maximum at the center click position, and that the 0 level of the audio signal is at the point where the RF output waveform Bch waveform appears, as shown in Fig. 4-12.
- If adjustment is necessary, proceed as follows.

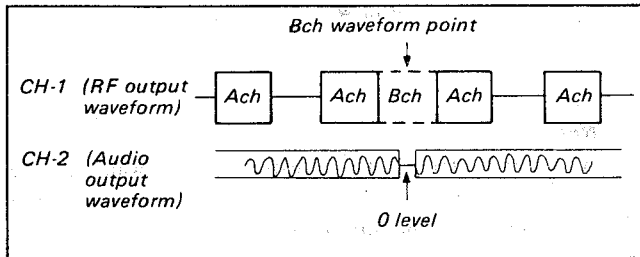


Fig. 4-12.

- 4) Tracking Control Center Adjustment
- 5) CTL Head Position Adjustment
 Set the tracking control knob at the center detent position and loosen the two ACE assembly position adjustment screws ①. As shown in Fig. 4-13 slide the ACE assembly with a screwdriver until it is in the position shown in Fig. 4-12 and the RF output waveform is maximum. Tighten the screws ① when this position is obtained.
- 6) Replay the color bars of the alignment tape and check the picture quality.

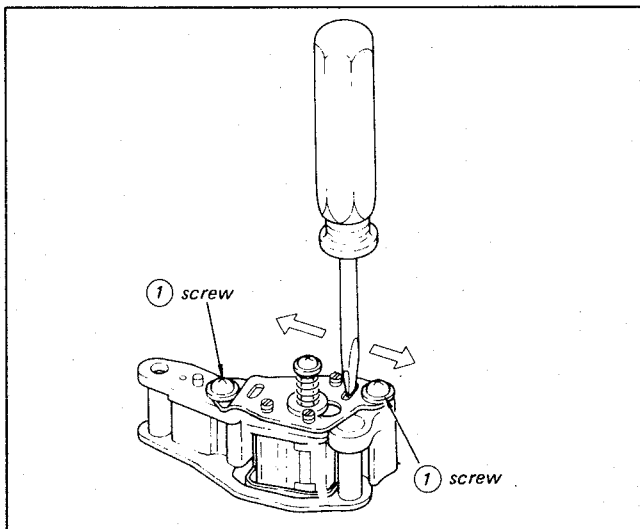


Fig. 4-13.

4-2-4. Audio Head (ACE Assembly) Height Adjustment

Perform this adjustment only after completing the exit side tracking adjustment.

- 1) Oscilloscope connection:
 1ch: CN501....1 pin (AM-3 board)
 Replay the 5 kHz portion of the alignment tape.
- 2) Turn the audio head height adjustment screw ① and the lateral adjustment screw ② (Fig. 4-14) until the audio output waveform amplitude is maximum.

Note:

Both of these adjustment screws should be turned in the same direction at the same angle, less than 30°.

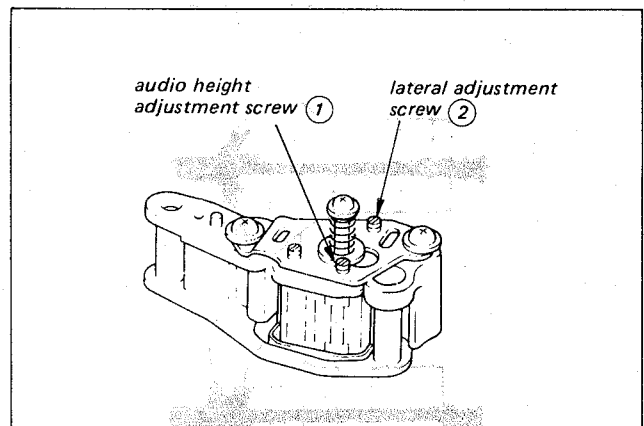


Fig. 4-14.

4-3. ADJUSTMENT AFTER REPLACEMENT OF THE CAPSTAN MOTOR

- 1) Perform the vertical adjustment of the capstan shaft according to 3-4. Replacement and Adjustment of Capstan Motor.
- 2) Play back the tracking portion of the alignment tape.
Connect the oscilloscope as follows:
1ch: CN2.....5 pin (RY-1 board)
2ch: CN2.....3 pin (RY-1 board)
- 3) Turn the tracking control knob clockwise to lower the RF output waveform to about 60% of the maximum.
- 4) Raise No. 7, 8 guides a little, and check the exit free waveform.
 - i) If the exit free waveform is within the range indicated in Fig. 4-15(a), (b), proceed from step 5).

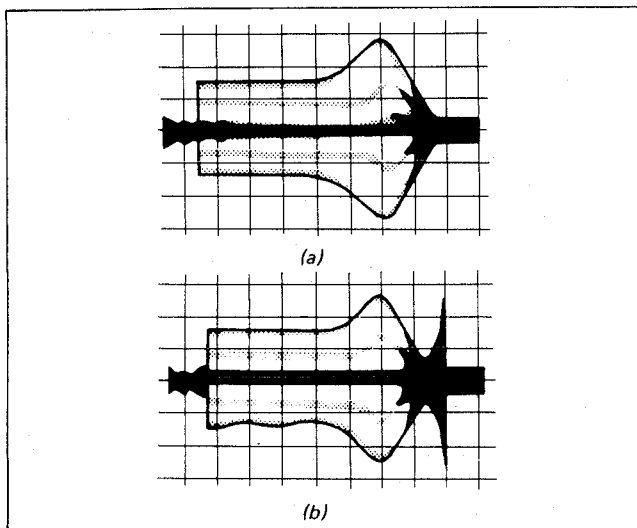


Fig. 4-15

- ii) If the peak of the exit free waveform is smaller than that illustrated in Fig. 4-15(a) (e.g. Fig. 4-16), loosen the lock screw, then turn the capstan adjustment screw until the waveform is within the specified range.

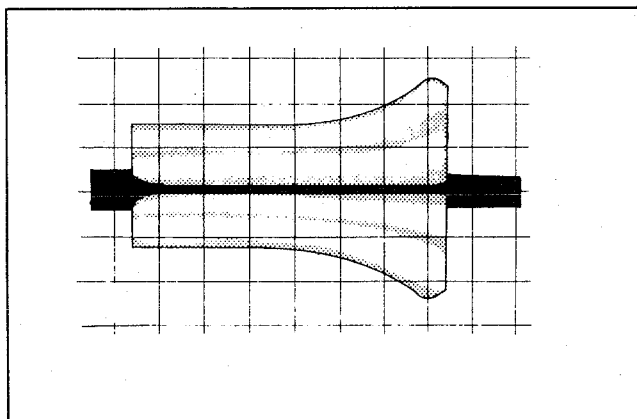


Fig. 4-16

- iii) If the peak shape of the exit free waveform differs from that shown in Fig. 4-15(b) (e.g. Fig. 4-17), loosen the lock screw, then turn the capstan adjustment screw clockwise until the waveform is within the specified range.

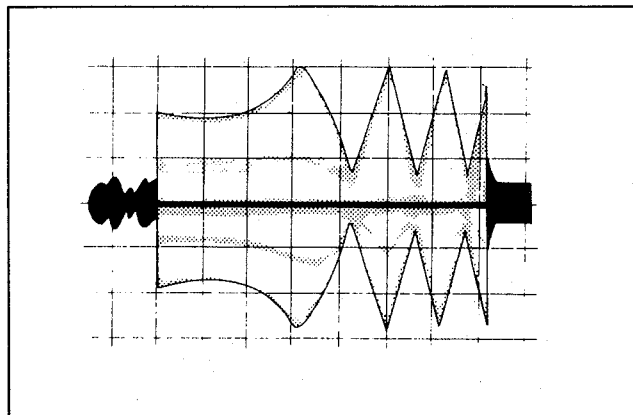


Fig. 4-17

Note:

After turning the capstan adjustment screw, wait until the waveform stabilizes (about 10 — 15 seconds) before continuing with the adjustment.

- 5) Lock the capstan lock screw. (Turn clockwise until it stops, then turn about 30° more. At this point, the exit free waveform will change slightly, and if it goes out of the range shown in Fig. 4-15(a), (b) return to step 4) and re-adjust.
- 6) Flatten the waveform with No. 7 guide, and match No. 8 guide to the tape. If the exit waveform rises, flatten it again with No. 7 guide and match No. 8 guide to the tape again.
- 7) Confirm and adjust according to 4-1-3, exit side adjustment procedure items 4), 5).

Note:

Check with L830 tape.

4-4. THIN TAPE MOVEMENT CHECK METHOD DURING TAPE PATH ADJUSTMENT

After confirming the tape path by using the procedures of section 4-1 through 4-3, check the thin tape movement by the procedure given below.

- 1) Prepare one reel of the commercial L-830. Remove the cassette lid with reference to Fig. 4-1.
- 2) Run L-830 prepared in the procedure 1 in the PLAY mode and check the following points;
 - i) Entrance Side
Check if the tape bends and is damaged on the No. 4 guide bottom flange, the No. 5 guide top flange and the No. 6 guide top flange. (The curl of the tape is allowed), but the bend of the tape is not allowed.) (Fig. 4-18)

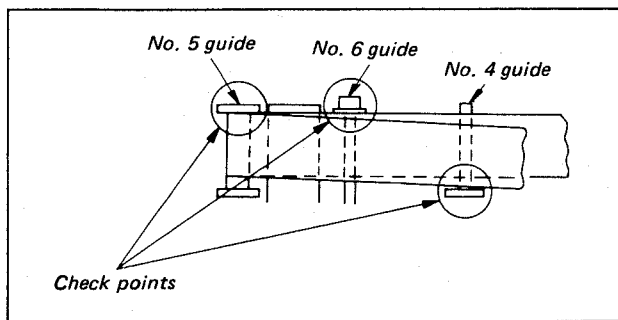


Fig. 4-18.

- ii) Exit side
Check if the tape bends and is damaged on the No. 7 guide top flange, the No. 8 guide top flange and the No. 10 guide top and bottom flanges. (The curl of the tape is allowed, but the bend of the tape is not allowed.) (Fig. 4-19)

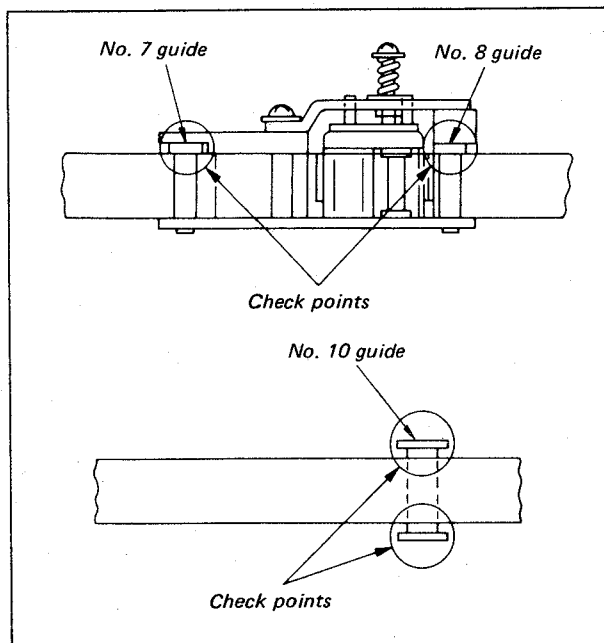


Fig. 4-19.

- 3) If the tape did not run normally in step 2, readjust the tape path by using KR5-2H.
 - a) The tape did not run normally on the entrance side, refer to 4-1-2.
 - b) The tape did not run normally on the exit side, refer to 4-1-3.

SECTION 5

ELECTRICAL ALIGNMENT

All the electrical alignment can be performed by using the equipment mentioned below, the alignment tape, and the PAL colour bar signal (100%).

[Equipment Required]

- (1) PAL Colour Monitor TV
- (2) Oscilloscope, Dual-trace, Bandwidth ... more than 10 MHz with delay mode
- (3) Frequency Counter
- (4) PAL Colour-Bar Generator
- (5) Digital voltmeter
- (6) VOM (20 k Ω /V)
- (7) Audio Signal Generator
- (8) Audio level meter (VTVM)
- (9) Attenuator
- (10) Alignment Tape, type: KR5-2H, Code No. 8-969-995-52
- (11) Alignment Tool (Adjusting screwdriver for semi-fixed resistors and coils)

Jig No. SL-0001, Code No. J-6080-001-A

[Setup for Alignment]

The antenna should be connected correctly to the antenna input terminal of the videocassette recorder.

It is important that the video output signal satisfies the specification because the telecast signal received by the incorporated tuner of the videocassette recorder is utilized as the adjustment signal of the machine. The incorporated tuner should be set to the channel with the best reception. The video signal should be checked with an oscilloscope connected to VIDEO OUT (BNC connector). Verify that the sync signal amplitude is approx. 0.3 Vp-p and the video signal amplitude is approx. 0.7 Vp-p at peak. Adjust the fine tuning while observing the signal and the TV screen so that the burst signal amplitude becomes approx. 0.3V $\pm$ 0.1 Vp-p. Also confirm that there is not spikes observed at the sync signal portion. (See Fig. 5-1.)

The video (colour bar) signal for the alignment is shown in Fig. 5-1.

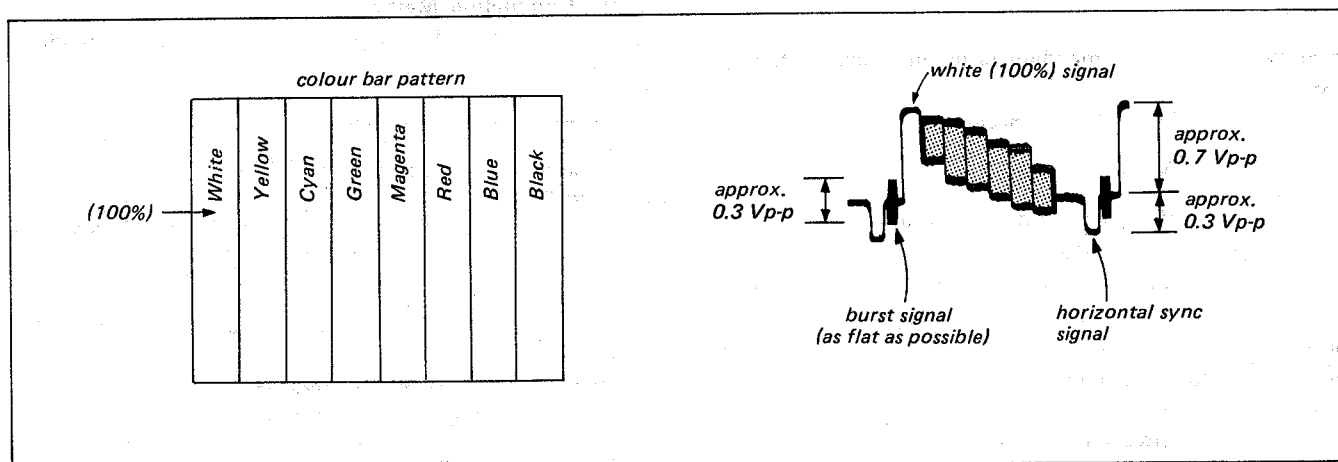


Fig. 5-1. Video (colour-bar) signal

[Alignment Tape]

KR5-2H

	Video signal	Audio signal	Playing time	Use for
1.	Colour bars	3 kHz - 5 dB	5 min	General performance, tape speed checks, switching position adjustment.
2.	Monoscope	333 Hz - 25 dB	5 min	Video head dihedral, audio level adjustment.
3.	RF sweep	5 kHz - 25 dB	5 min	Video, audio frequency characteristics, audio azimuth adjustment marker: 1, 2, 3.58, 4.5, 5.2 MHz
4.	Tracking 1 MHz (CH-B) *1 (Channel B is inserted in every 3 frames.)	1 kHz - 5 dB *2 (Signal is dropped out in the positions where channel B is inserted.)	5 min	Tracking, Audio height adjustments CTL Position check (Check if *1 and *2 are the same position.)

[Alignment Tool for Semi-fixed Variable Resistors and Coils]

Semi-fixed variable resistors and inductances should be adjusted with the alignment tool exclusively prepared for the adjustment of the components. A common screwdriver is too large for adjusting the components from the conductor side of a printed circuit board.

The metal blade of the alignment tool is used for variable resistors and trimmer capacitors and the plastic tip is used for variable inductances.

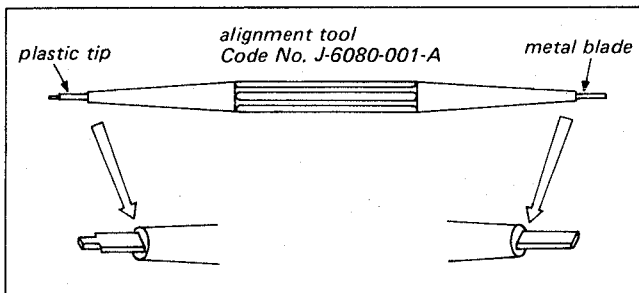


Fig. 5-2. Alignment tool

[Required levels and Impedances of Input and Output]

Video

Input VIDEO IN: BNC connector

1 Vp-p +1.0 Vp-p
-0.5 Vp-p

75Ω unbalanced, sync negative

VIDEO OUT: BNC connector

1 Vp-p ± 0.1 Vp-p

75Ω unbalanced, sync negative

Audio

Input AUDIO IN: phono jack

47 kΩ, -10 dBs

(0 dBs = 0.775V rms)

Output AUDIO OUT: phono jack

Load impedance less than 10 kΩ

-10 dBs with 47 kΩ load unbalanced

[Colour Bar Signal]

The 100% colour bar signal recorded on the Alignment tape is shown in Fig. 5-3.

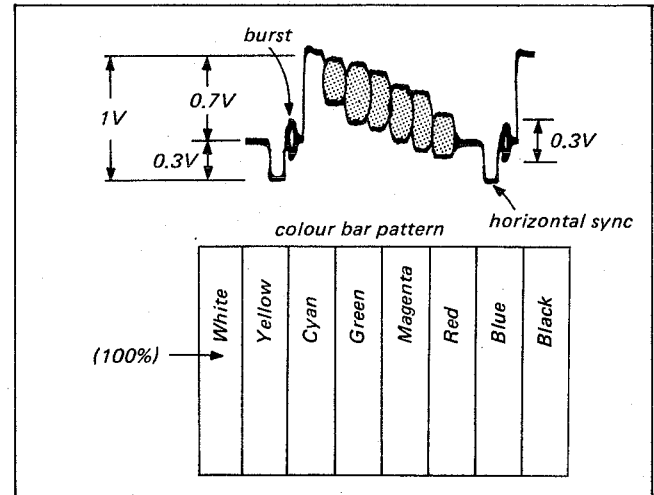


Fig. 5-3. Colour bar signal recorded on the alignment tape

[75Ω Terminating Method]

To terminate the video output terminal follow the steps shown in Fig. 5-4.

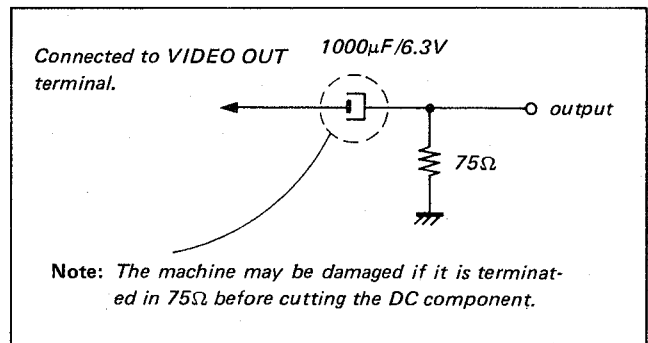
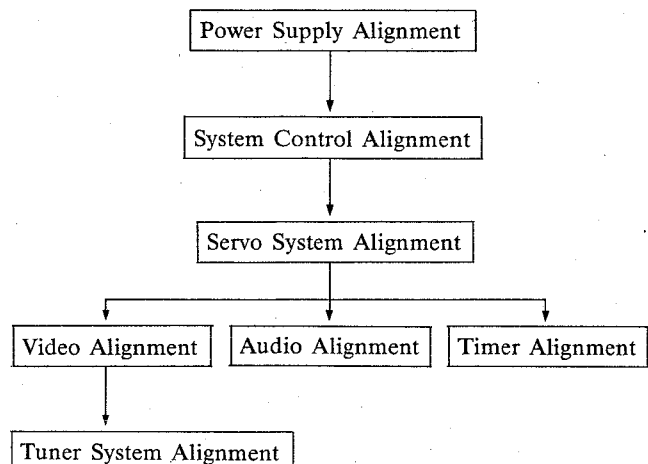


Fig. 5-4. 75Ω terminating circuit

[Adjustment procedure]

Adjust in the order given below.



5-1. POWER SUPPLY CHECK (PS-22 Board)

Measure an E-E mode (power supply switch ON).

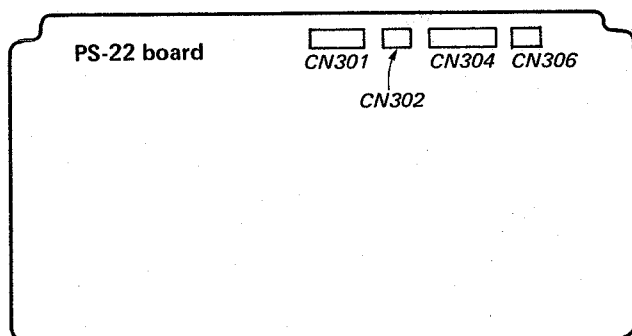


Fig. 5-5. Component layout

1. Unswitched 12V Check
Pin ⑦ of CN304 shall be $12 \pm 0.5V$.
2. Switched 12V Check
Pin ③ of CN301 shall be $12.2 \pm 0.2V$
3. Switched 9V Check
Pin ① of CN306 shall be $9.0 \pm 0.2V$
4. Switched 5V Check
Pin ① of CN301 shall be $5.2 \pm 0.5V$

5-2. SYSTEM CONTROL CHECK (SS-16 Board)

1. Clock Frequency Check

Mode: E-E
Signal: None
Frequency counter: Pin ②⑥ of IC601 (TP601)
Check: f: 4 MHz

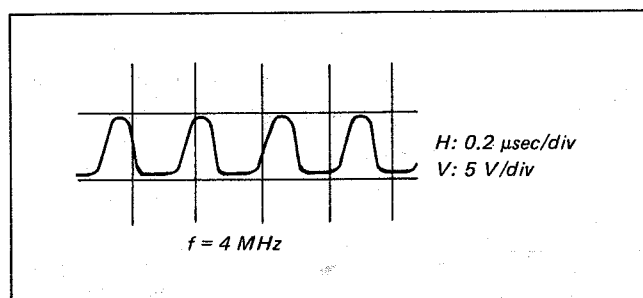


Fig. 5-6. System control check

5-3. SERVO SYSTEM ALIGNMENT

Alignment Sequence

1. Drum servo system alignment
2. Capstan servo system alignment

5-3-1. Drum Servo System Alignment

- 1) Drum Free Speed Adjustment (SS-16 Board)
Mode: Playback
Signal: Alignment tape colour bar, or monoscope
Oscilloscope: CH-1 TP405 (Pin ⑬ of IC301)
CH-2 TP402 (Pin ③⑨ of IC301)

[Alignment method]

Adjust to $553 \mu\text{sec} \pm 10 \mu\text{sec}$ with RV303. (See Fig. 5-7.)

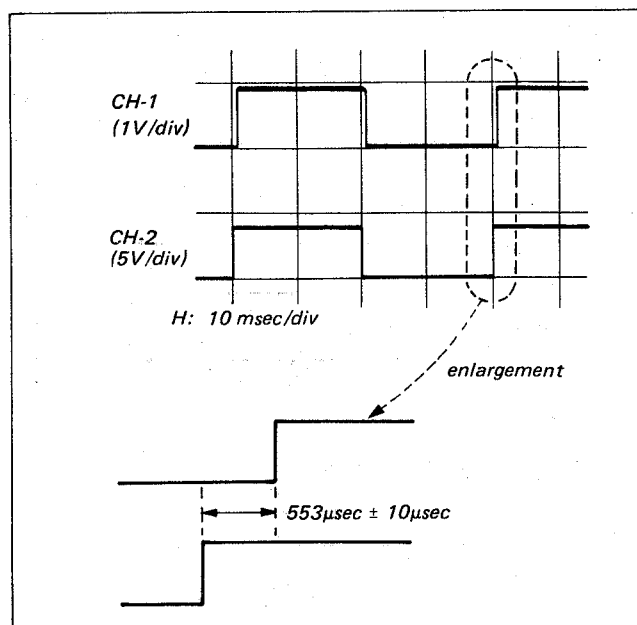


Fig. 5-7. Drum free speed adjustment

2) RF Switching Position Adjustment (SS-16 Board)

Mode: Playback
Signal: Alignment tape colour bar or monoscope
Oscilloscope: CH-1 TP402 (Pin ③⑨ of IC301)
CH-2 Pin ④⑩ of IC301

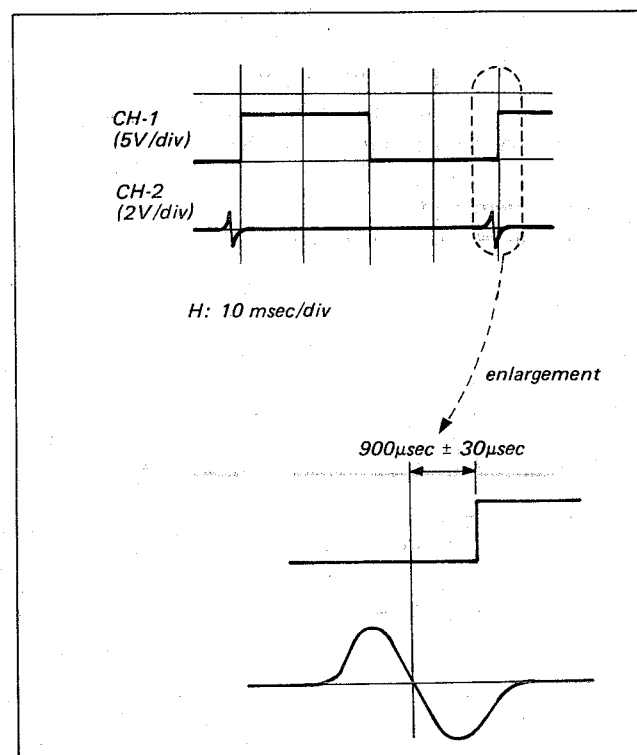


Fig. 5-8. RF switching position adjustment (1)

[Adjustment method]

- i) Adjust to $900 \mu\text{sec} \pm 30 \mu\text{sec}$ with RV302. (See Fig. 5-8.)
- ii) Change connection of CH-2 only to Pin ③② of IC301.
- iii) Adjust to $900 \mu\text{sec} \pm 30 \mu\text{sec}$ with RV301. (See Fig. 5-9.)

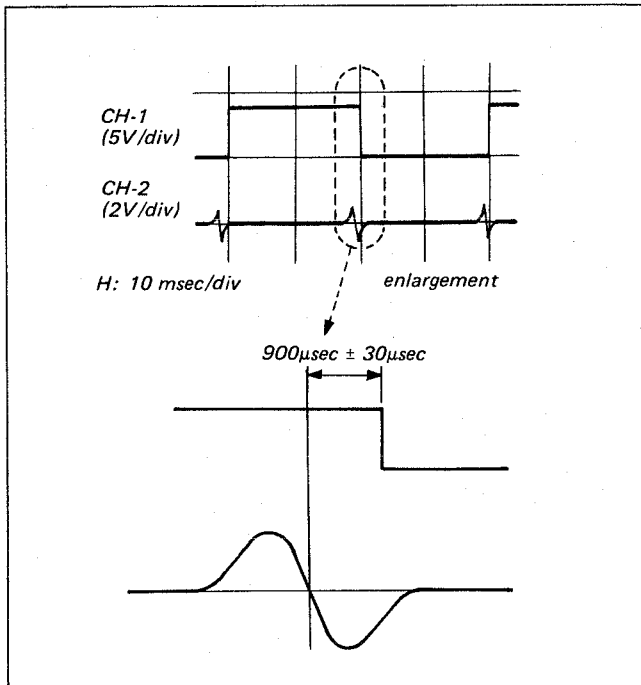


Fig. 5-9. RF switching position adjustment (2)

- 3) PICTURE SEARCH, Drum Free Speed Adjustment (SS-16 Board)

Mode: PICTURE SEARCH (FWD)
 Signal: Alignment tape colour bar or monoscope
 Frequency counter: Pin ④ of CN312 (TP404)

[Adjustment method]

Adjust to $64 \mu\text{sec} \pm 0.3 \mu\text{sec}$ with RV310. (See Fig. 5-10.)

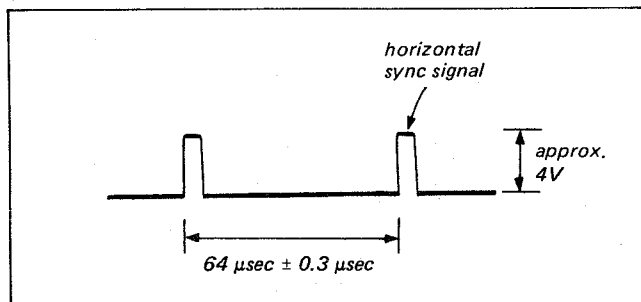


Fig. 5-10. PICTURE SEARCH, drum free speed adjustment

5-3-2. Capstan Servo System Alignment

- 1) Capstan DC Bias Adjustment (SS-16 Board)

Mode: playback
 Signal: Alignment tape colour bar or monoscope
 Oscilloscope: TP407 (Pin ②① of IC301)

[Adjustment method]

Adjust the duty (ratio for A and B) to $50\% \pm 5\%$ with the RV307.

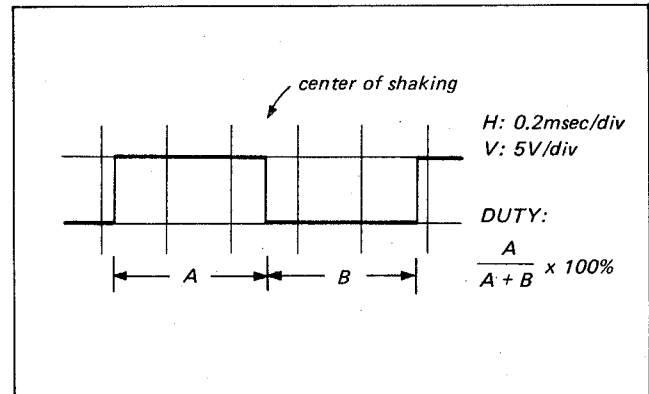


Fig. 5-11. Capstan DC bias adjustment

- 2) PICTURE SEARCH, Capstan DC Bias Adjustment (SS-16 Board)

Mode: PICTURE SEARCH (FWD)
 Signal: Alignment tape colour bar or monoscope

[Adjustment method]

- i) Set up the picture search (forward) mode and adjust with RV308 so that the progression of noise bars becomes as slow as possible. (See Fig. 5-12.)
- ii) Set up the picture search (reverse) mode and check that noise bars do not progress very quickly.

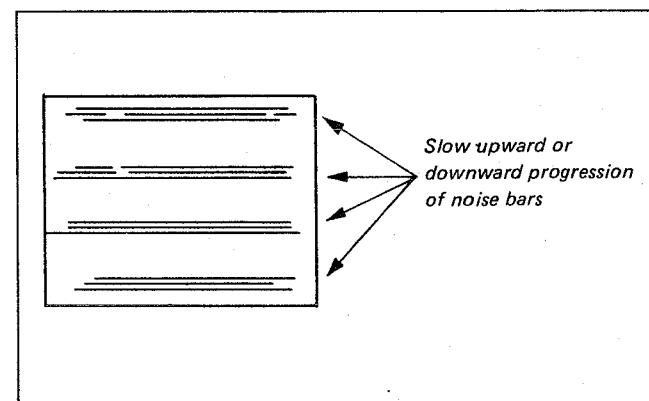


Fig. 5-12. PICTURE SEARCH, capstan DC bias adjustment

- 3) Tracking Center Adjustment (SS-16 Board)
- Mode: Playback
- Signal: Alignment tape colour bar, or monoscope
- Oscilloscope: CH-1 TP405 (Pin ⑬ of IC301)
CH-2 TP406 (Pin ⑮ of IC301)

[Adjustment method]

- i) Set the TRACKING knob to the center click position.
- ii) Adjust to $7.05 \text{ msec} \pm 0.05 \text{ msec}$ with RV304. (See Fig. 5-13.)

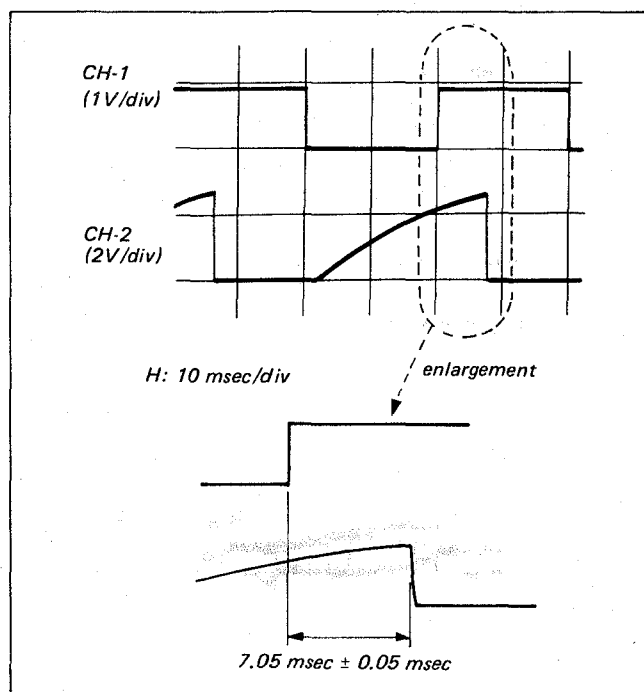


Fig. 5-13. Tracking center adjustment

5-4. PAL VIDEO SYSTEM ALIGNMENT

As a rule, first the playback system is aligned with an alignment tape to check that it operates normally, then the recording system is aligned.

The alignment sequence is shown below. The Y signal and chroma signal systems are aligned for both playback and recording systems.

Colour video signal supplied by the PAL colour bar generator is used as video input signal for video system alignment in the record mode. Check that the sync and colour burst signals conform to the specifications designated in "Set-up for Alignment" in Fig. 5-1.

[Playback System Alignment]

1. Playback frequency characteristic adjustment
2. Expand adjustment
3. Y-comb adjustment
4. Dropout compensator adjustment
5. Playback video level adjustment
6. Carrier balance adjustment
7. Chroma comb filter adjustment
8. Jog exchange chroma level adjustment
9. Shift adjustment

[Record System Alignment]

1. Sync and peak AGC adjustment
2. Carrier set adjustment
3. Deviation adjustment
4. Compress adjustment
5. $1/2 f_H$ shift adjustment
6. Dark clip and white clip adjustment
7. Y record current adjustment
8. 4.43 MHz REF adjustment
9. Pilot burst flag adjustment
10. ACC adjustment
11. AFC adjustment
12. AFC offset adjustment
13. Pilot burst signal level adjustment
14. Cleaning flag adjustment
15. Chroma record current adjustment

5-4-1. Playback System Alignment

1) Playback Frequency Characteristic Adjustment (RY-1 Board)

- Adjust both the A and B channels.
- The B channel indicated by ().
- Mode: Playback
- Signal: Alignment tape RF sweep
- Oscilloscope: TP1 (Pin ⑤ of CN2)
- External trigger: TP2 (Pin ④ of CN2)

[Adjustment method]

- i) Turn tracking knob to maximum output.
- ii) Adjust RV2 to make the 2 MHz amplitude of A and B channels equal. (See Fig. 5-14.)
- iii) Set the trigger slope to $-(+)$.
- iv) Adjust the 5.2 MHz amplitude to 55 — 75% of the 2 MHz amplitude with RV3 (RV4).

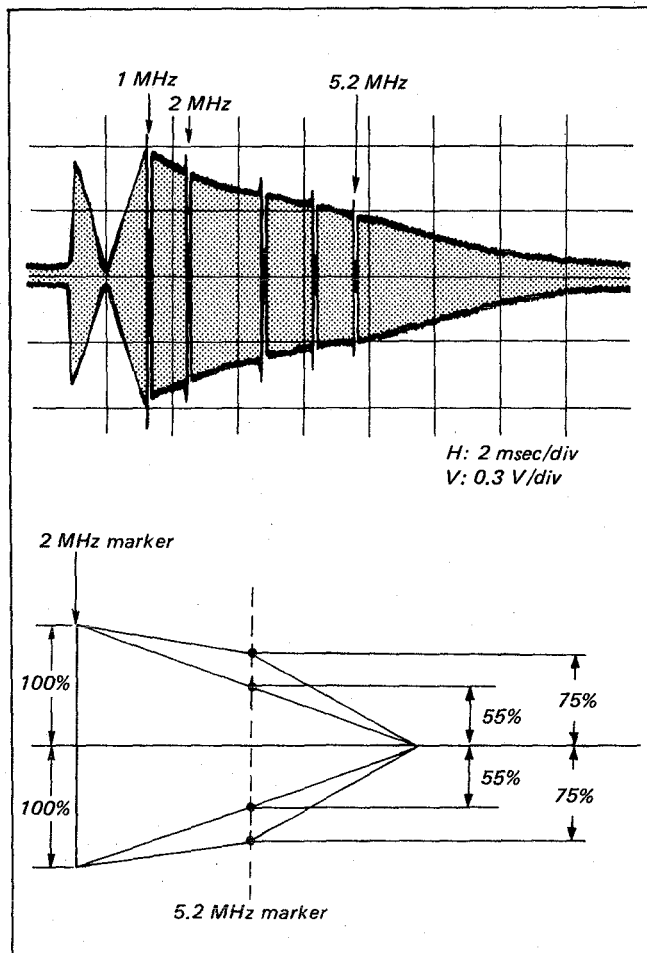


Fig. 5-14. Playback amplifier frequency characteristic adjustment

2) Expand Adjustment (RY-1 Board)

- Mode: Playback
- Signal: Colour bar
- Digital voltmeter: See Fig. 5-15.

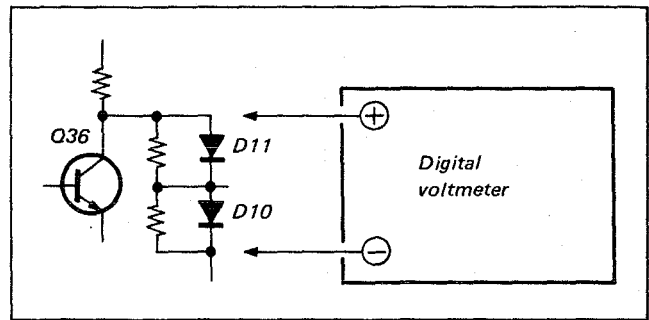


Fig. 5-15.

[Adjustment method]

- i) Adjust to 0.43 ± 0.01 Vdc with RV13.

3) Y-Comb Adjustment (RY-1 Board)

- Mode: Playback
- Signal: Colour bar
- Oscilloscope: Pin ⑬ of IC4

[Adjustment method]

- i) Adjust RV12 for minimum output. (See Fig. 5-16.)

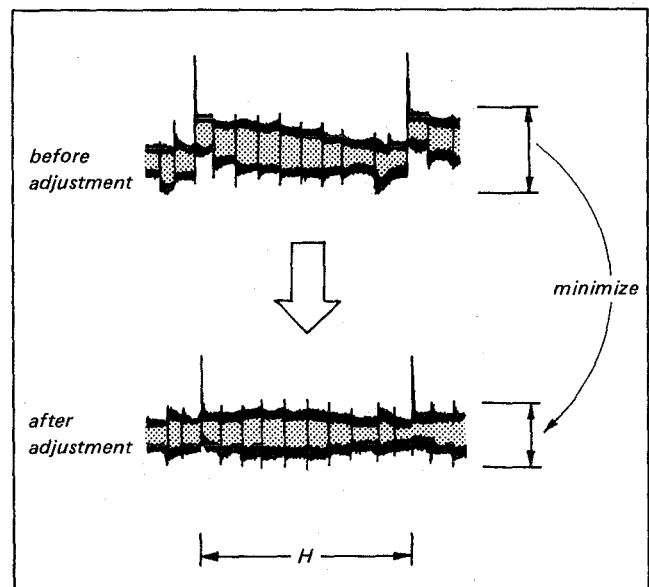


Fig. 5-16. Y-comb adjustment

4) Dropout Compensator Threshold Adjustment (RY-1 Board)

- Mode: Playback
- Signal: A recorded tape with dropouts

[Adjustment method]

- i) Turn RV11 fully clockwise (↻) as seen from the pattern side. In this state, dropouts appear on the monitor screen.
- ii) Slowly turn RV11 counterclockwise (↺) and set to make the dropouts disappear.
- iii) Rewind the tape and verify that the dropouts described in (i) above have disappeared.

- 5) Playback Video Level Adjustment (RY-1 Board, YC-25 Board)
 Mode: Playback
 Signal: Alignment tape colour bar
 Oscilloscope: VIDEO OUT (75Ω terminated) on YC-25 Board

[Adjustment method]

- i) Adjust to $1.0V \pm 0.05 V_{p-p}$ with RV14 on RY-1 Board.

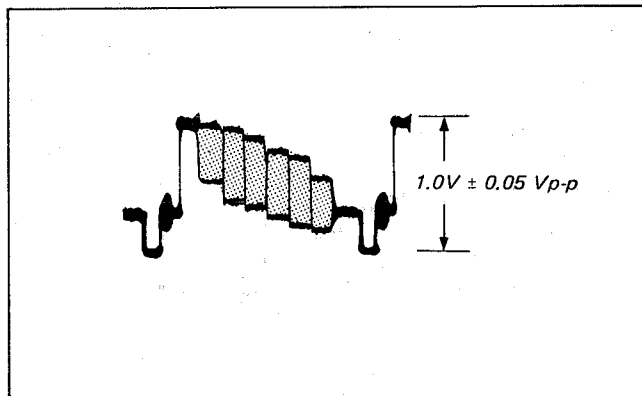


Fig. 5-17. Playback video level adjustment

- 8) JOG Exchange Chroma level Adjustment (YC-25 Board)
 Mode: PB • PAUSE (STILL)
 Signal: colour bar
 Oscilloscope: Pin ⑧ of IC009

[Adjustment method]

- i) Adjust RV013 so that the fluctuation of level is minimum. (See Fig. 5-18.)

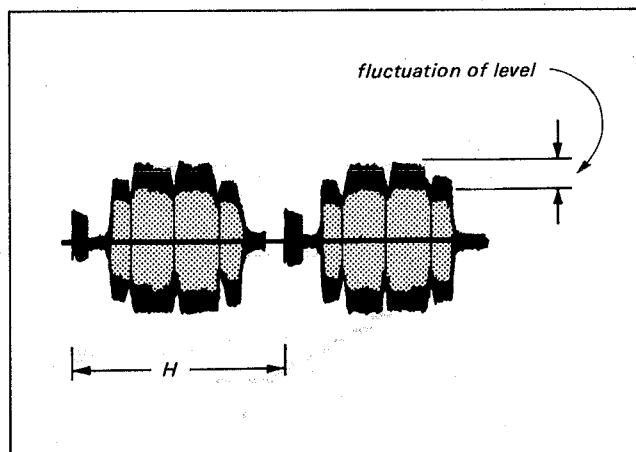


Fig. 5-18. JOG EXCH. C. level adjustment

- 6) Carrier Balance Adjustment (YC-25 Board)
 Mode: Playback
 Signal: Alignment tape colour bar
 Adjust while observing the monitor TV screen.

[Adjustment method]

- i) Minimize beats with RV004.

- 7) Chroma Comb Filter Adjustment (YC-25 Board)
 Mode: Playback
 Signal: Alignment tape colour bar
 Adjust while observing the monitor TV screen.

[Adjustment method]

- i) Minimize beats with RV003 and LV002.

- 9) Shift Adjustment (YC-25 Board)
 Mode: Playback
 Signal: Alignment tape colour bar
 Oscilloscope: Base of Q034

[Adjustment method]

- i) Align the signal level (per 1H) with RV008.

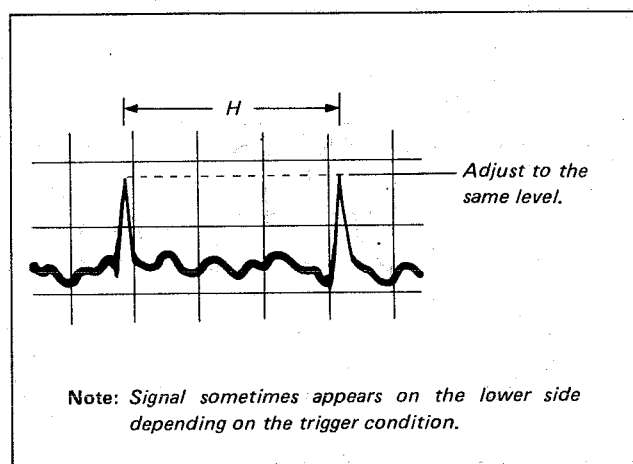


Fig. 5-19. Shift adjustment

5-4-2. Record System Alignment

- 1) Sync and Peak AGC Adjustment (YC-25 Board)

Mode: E-E
Oscilloscope: VIDEO OUT (75Ω terminated)
Signal: B/W

[Adjustment method]

- i) Turn RV10 fully counterclockwise (↺) as seen from the pattern side. (Peak AGC off)
- ii) Adjust to 1 Vp-p with RV11.
- iii) Turn RV10 clockwise (↻) and set it so that the output level just starts to lower.

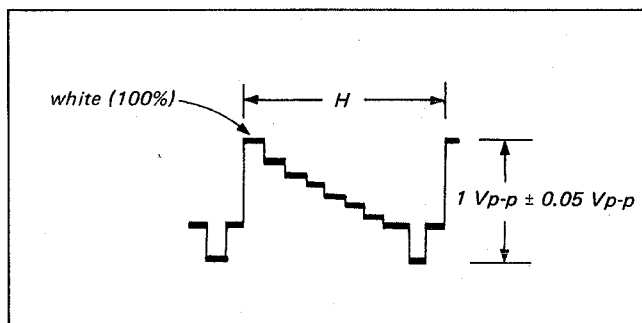


Fig. 5-20. Sync and peak AGC adjustment

- 2) Carrier Set Adjustment (RY-1 Board)

Mode: E-E
Signal: None
Frequency counter: Pin ④ of IC3

[Adjustment method]

- 1) Adjust to 3.8 MHz ± 0.04 MHz with RV8.

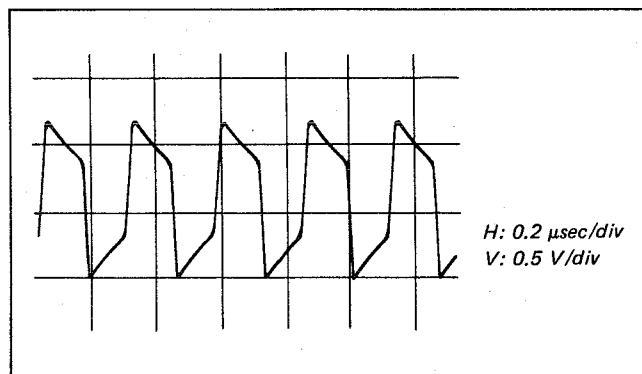


Fig. 5-21. Carrier set adjustment

- 3) Deviation Adjustment (YC-25 Board)
 - The playback system adjustment and the carrier set adjustment in Paragraph 2) above must be completed before making this adjustment.

Mode: Self-recording and playback
Signal: Colour bar
Oscilloscope: Pin ④ of CN001, VIDEO OUT (75Ω terminated)

[Adjustment method]

- i) Supply the colour bar signal and set up E-E mode.
- ii) Connect the oscilloscope to Pin ④ of CN001.
- iii) Adjust the Y signal level to 1 Vp-p with RV012.
- iv) Set up RECORD mode.
- v) Playback the recorded section of the tape.
- vi) Connect the oscilloscope to VIDEO OUT.
- vii) Check that the video signal level is 1.0 Vp-p ± 0.05 Vp-p, if the level is outside of this range, repeat Steps iv) through vi) above adjusting with RV012 until the standard value is obtained.

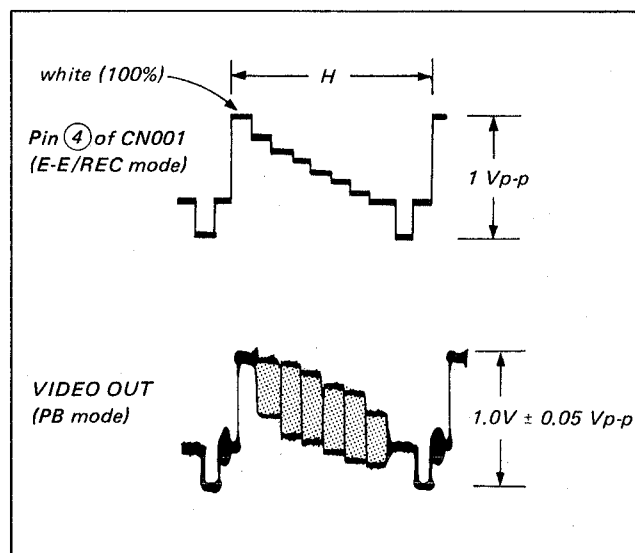


Fig. 5-22. Deviation adjustment

- 4) Compress Adjustment (RY-1 Board)

Mode: E-E
Signal: None
Digital voltmeter: See Fig. 5-23.

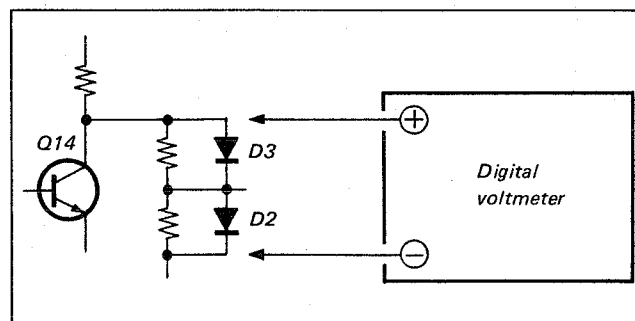


Fig. 5-23.

[Adjustment method]

- i) Adjust to 0.3V ± 0.01 Vdc with RV7.
- 5) 1/2 f_H Shift Adjustment (RY-1 Board)

Mode: Record
Signal: None
Spectrum analyzer: Pin ④ of IC3

[Adjustment method]

- i) Adjust RV6 so that the fluctuation of frequency is $7.8 \text{ kHz} \pm 1.5 \text{ kHz}$.

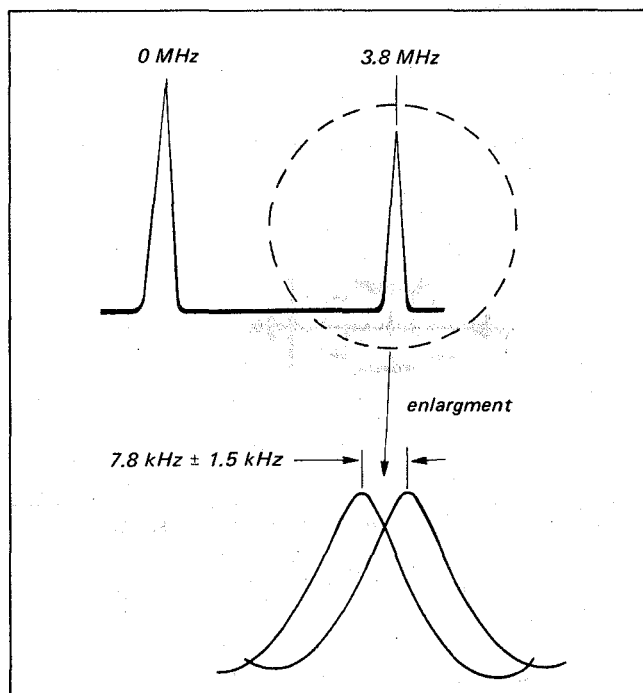


Fig. 5-24. $1/2 f_H$ shift adjustment

- 6) Dark Clip and White Clip adjustment (RY-1 Board)

Mode: E-E
Signal: Colour bar
Oscilloscope: Emitter of Q17

[Adjustment method]

- i) Adjust RV10 so that the signal tip (dark peak) is $70\% \pm 10\%$. (See Fig. 5-25.)
- ii) Adjust RV9 so that the signal tip (white peak) is $220\% \pm 10\%$.

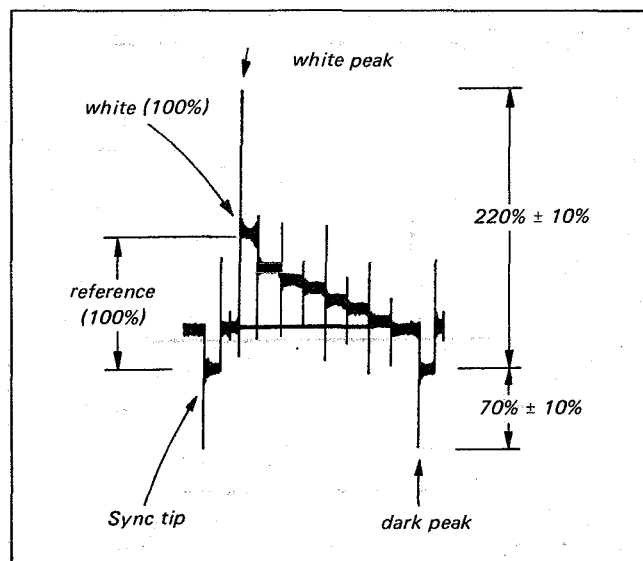


Fig. 5-25. Dark clip and white clip adjustment

- 7) Y Record Current Adjustment (RY-1 Board)

Mode: Record
Signal: None
Oscilloscope: Pin ② of CN3 (TP4)

[Adjustment method]

- i) Adjust to $380 \text{ mV} \pm 10 \text{ mVp-p}$ with RV1. (See Fig. 5-26.)

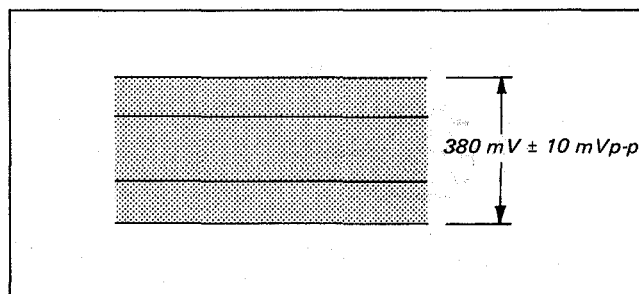


Fig. 5-26. Y record current adjustment

- 8) 4.43 MHz REF. adjustment (YC-25 Board)

Mode: E-E
Signal: Colour bar
Frequency counter: Pin ⑦ of CN008

[Adjustment method]

- i) Adjust to $4.433619 \text{ MHz} \pm 5 \text{ Hz}$ with CV001.

- 9) Pilot Burst Flag Adjustment (YC-25 Board)

Mode: E-E
Signal: Colour bar
Oscilloscope: Pin ⑩ of IC12

[Adjustment method]

- i) Adjust to $2.2 \mu\text{sec} \pm 0.1 \mu\text{sec}$ with RV009. (See Fig. 5-27.)

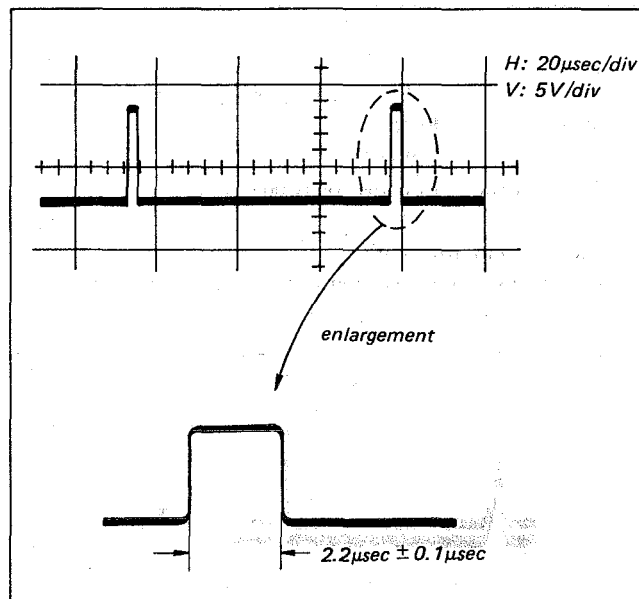


Fig. 5-27. Pilot burst flag adjustment

10) ACC Adjustment (YC-25 Board)

Mode: E-E
Signal: Colour bar
Oscilloscope: Pin ②④ of IC001

[Adjustment method]

- i) Adjust to $0.68V \pm 0.05V_{p-p}$ with RV001. (See Fig. 5-28.)

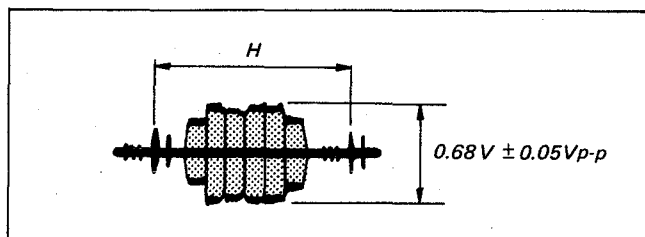


Fig. 5-28. ACC adjustment

11) AFC Adjustment (YC-25 Board)

Mode: E-E
Signal: Colour bar
Oscilloscope: Pin ①⑥ of IC003

[Adjustment method]

- i) Adjust to $1.7V_{dc} \pm 0.1V_{dc}$ with RV006. (See Fig. 5-29.)

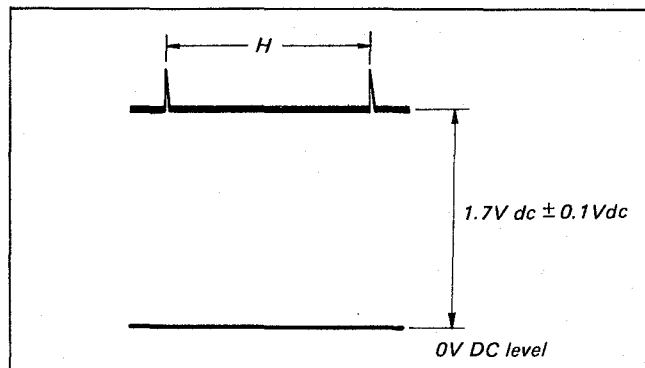


Fig. 5-29. AFC adjustment

12) AFC Offset Adjustment (YC-25 Board)

Mode: Record
Signal: Colour bar
Oscilloscope: Pin ①⑥ of IC003

[Adjustment method]

- i) Adjust RV005 so that the fluctuation of DC level is minimum. (See Fig. 5-30.)

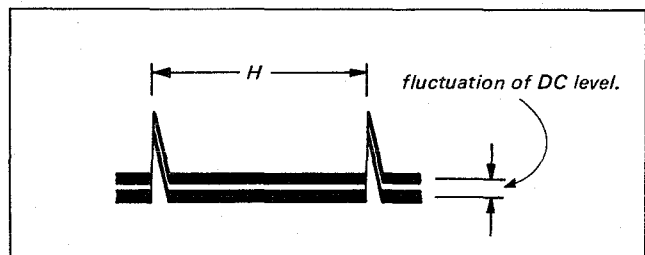


Fig. 5-30. AFC offset adjustment

13) Pilot Burst Signal Level Adjustment (YC-25 Board)

Mode: E-E
Signal: Colour bar
Oscilloscope: Pin ⑧ of IC002

[Adjustment method]

- i) Align the pilot burst signal with the chroma signal level using RV002.

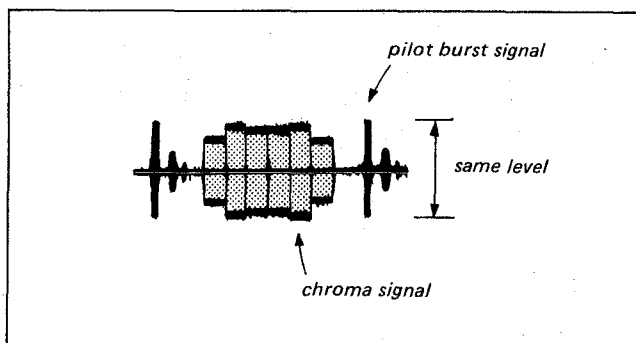


Fig. 5-31. Pilot burst signal level adjustment

14) Cleaning Flag Adjustment (YC-25 Board)

Mode: E-E
Signal: Colour bar
Oscilloscope: CH1 Pin ⑥ of IC12
CH2 Pin ⑨ of IC12

[Adjustment method]

- i) Adjust to $1.0\mu sec \pm 0.1\mu sec$ with RV006. (See Fig. 5-32.)

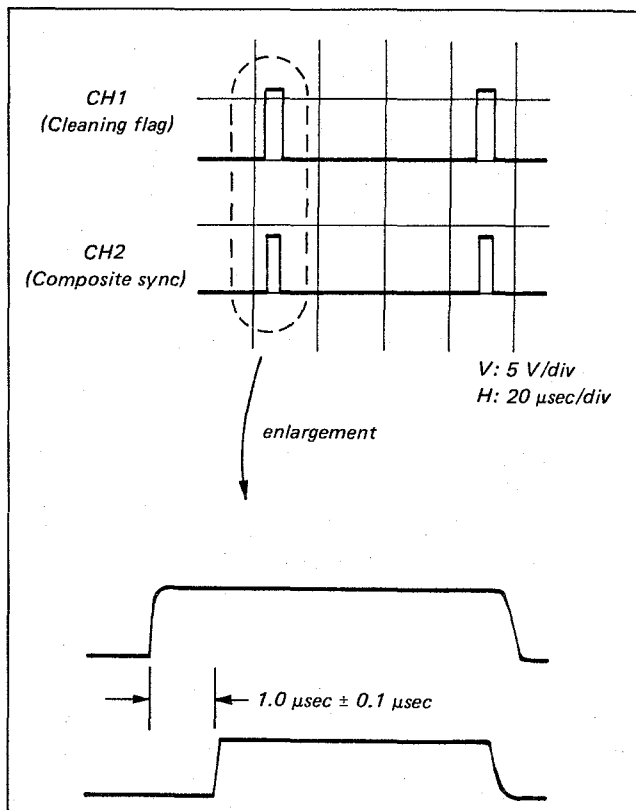


Fig. 5-32. Cleaning flag adjustment

15) Chroma Record Current Adjustment (RY-1 Board)

Mode: Record
Signal: Colour bar
Oscilloscope: Pin ③ of CN3 (TP5)

[Adjustment method]

- i) Adjust to $250 \text{ mV} \pm 10 \text{ mVp-p}$ with RV5. (See Fig. 5-33.)

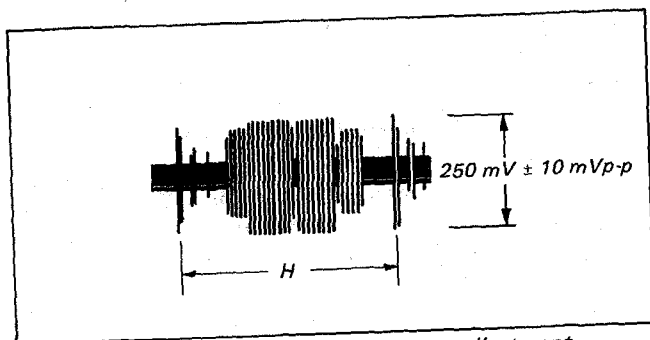


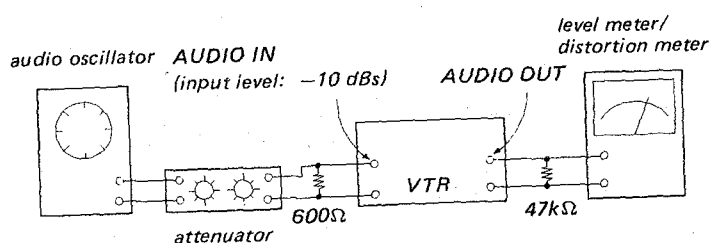
Fig. 5-33. Chroma record current adjustment

5-5. AUDIO SYSTEM ADJUSTMENT (AM-3 Board)

Use a Dynamicron tape for adjustments.

[Connection of Related Equipment]

Note: Set the INPUT SELECT switch to LINE.
Set the TONE switch to HIGH.



[Adjustment method]

1. ACE head adjustment... See "Mechanical Adjustment"
2. Playback frequency characteristic adjustment
3. Playback output level adjustment
4. Bias oscillator check
5. Record bias adjustment
6. Record current adjustment
7. Overall frequency characteristic check
8. AGC output check
9. Overall S/N check
10. Overall distortion check

1. ACE Head Adjustment

Refer to "Mechanical Adjustment"

2. Playback Frequency Characteristic Adjustment

- (1) Play back 333 Hz and 5 kHz from the alignment tape and adjust so that the level difference between 333 Hz and 5 kHz is within $0 \text{ dB} \pm 1 \text{ dB}$ with RV503.

3. Playback Output Level Adjustment

- (1) Play back 333 Hz from the alignment tape and adjust so that the output level is $-30 \text{ dBs} \pm 0.5 \text{ dB}$ with RV502.

4. Bias Oscillator Check

- (1) Set the input signal level to zero and set up the RECORD mode.
- (2) Connect a frequency counter to Pin ② of CN504. The reading should be $65 \text{ kHz} \pm 6.5 \text{ kHz}$. (See Fig. 5-34.)

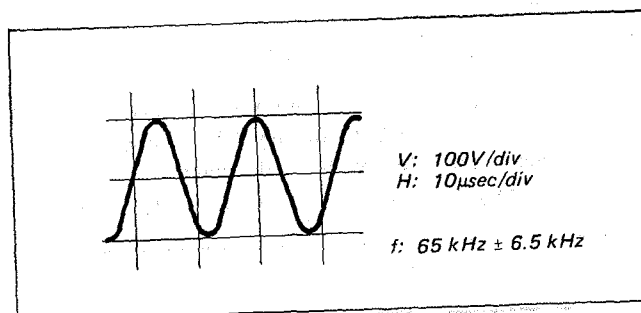


Fig. 5-34. Bias oscillator check

5. Record Bias Adjustment

Check that "Playback frequency characteristic adjustment" has been made.

- (1) Connect TP506 and TP505 (GND) with a jumper wire so as to turn off the AGC operation.
- (2) Supply a 333 Hz signal.
- (3) Set up the E-E mode and adjust the oscillator output level so that the level meter reading is -30 dBs .
- (4) Record signals.
- (5) Supply a frequency of 7 kHz and perform Steps (3) and (4) above.
- (6) Play back the recorded section of the tape and check that the output level at 7 kHz is $\pm 1 \text{ dB}$ relative to the output level at 333 Hz. If the level is outside this range, repeat Steps (2) through (5) adjusting with CT501 until the standard is met.
- (7) Remove the jumper wire after making the adjustment.

6. Record Current Adjustment

- (1) Supply a 333 Hz signal at -10 dBs .
- (2) Record signals.
- (3) Play back the recorded section of the tape and check that the output level is $-9 \text{ dBs} \pm 1 \text{ dB}$. If the level is outside this range, repeat Steps (1) through (2) above adjusting with RV501 until the standard value is obtained.

7. Overall Frequency Characteristic Check

- (1) Connect TP506 and TP505 (GND) with a jumper wire so as to turn off the AGC operation.
- (2) Connect a 333 Hz signal.
- (3) Set up the E-E mode and adjust the oscillator output level so that the level meter reading is -30 dBs.
- (4) Record signals.
- (5) Change the frequency to 50 Hz, 100 Hz, 7 kHz and 10 kHz and repeat Steps (3) and (4).
- (6) Play back the recorded section of the tape and verify that the level is within the specification. (See Fig. 5-35.)

Standard values: With reference to the 333 Hz playback output level.

50 Hz +2.5 dB
-6

100 Hz +2.5 dB
-3

7 kHz +2.5 dB
-2.5

10 kHz +2.5 dB
-10

- (7) If the specified values cannot be attained, perform 2 again. "Playback Frequency Characteristic Adjustment" and "Record Bias Adjustment".
- (8) Remove the jumper wire after making the adjustment.

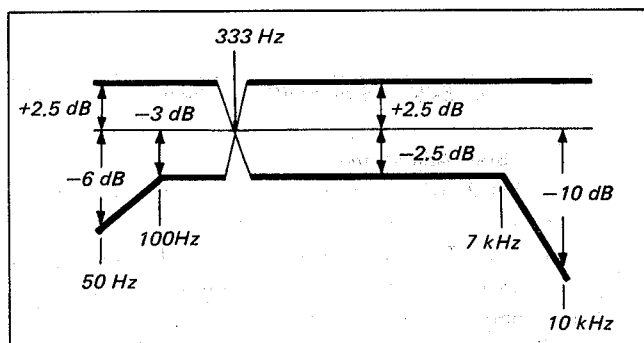


Fig. 5-35. Overall frequency characteristic

8. AGC Output Check

- (1) Connect a 333 Hz signal at -10 dBs.
- (2) Set up the E-E mode.
- (3) Check that the output level is -10 dBs $\begin{smallmatrix} +2 \\ -3 \end{smallmatrix}$ dB.

9. Overall S/N Check

- (1) Supply a 333 Hz signal at -10 dBs.
- (2) Record signals.
- (3) Set the input signal level to zero and record signals.
- (4) Play back the recorded section of the tape and check that the output level difference is greater than 38 dB.

10. Overall Distortion Check

- (1) Supply a 333 Hz signal at -10 dBs.
- (2) Record signals.
- (3) Play back the recorded section of the tape and verify that the distortion is below 4%.

5-6. TUNER SYSTEM ADJUSTMENT (TU-39 Board)

1) Tuner AGC Adjustment

- (1) Receive RF signals (61 dB μ /75 Ω open) from a colour bar generator, etc.
- (2) Connect a digital voltmeter to TP001 (Pin ④ of IC001).
- (3) Adjust RV001 to 7.2V $\pm$ 0.1V dc.

2) AFT Adjustment

- (1) Set RV002 to the mechanical center.
- (2) Input RF signals, and adjust PRESET VR finely for the best picture quality, while watching the monitor screen.
- (3) Push the AFT switch to turn on the AFT function, and make the following adjustments.
- (4) Connect a digital voltmeter to pin ⑤ of IC001.
- (5) Adjust T005 to 6V dc.
- (6) Connect a digital voltmeter across pins ⑤ and ⑥ of IC001.
- (7) Adjust RV002 to 0V $\pm$ 0.25V dc.

5-7. TIMER SYSTEM ADJUSTMENT (TM-37 Board)

1) Clock Adjustment

- (1) Connect a time interval counter to TP001.
- (2) Adjust to 15624.85 μ sec $\pm$ 0.05 μ sec with TC001.

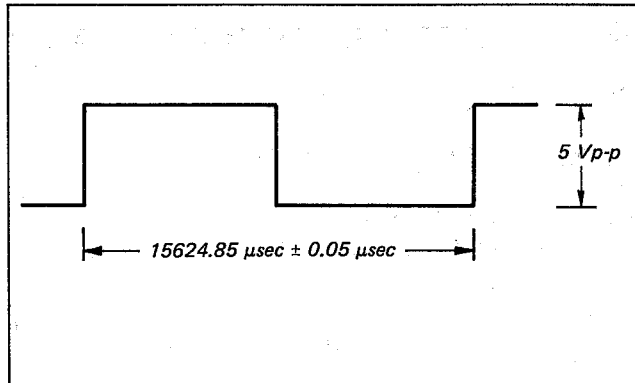


Fig. 5-36. Clock adjustment

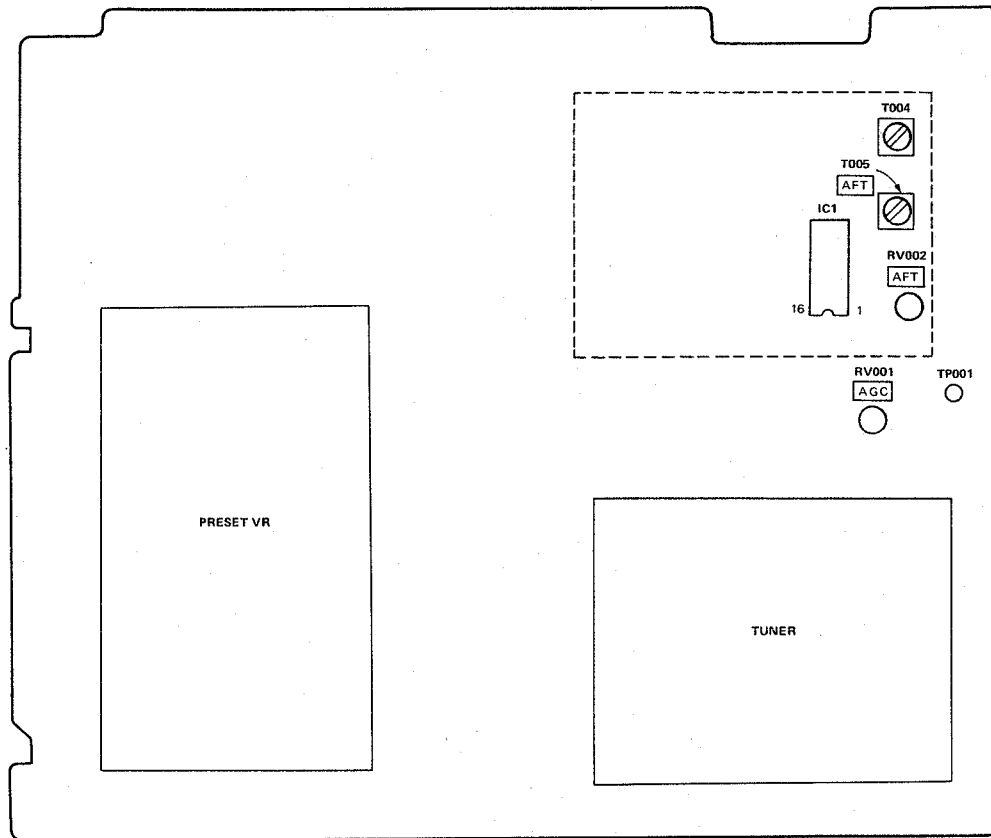
The diagram illustrates the receiver section of a radio receiver, featuring the following components and connections:

- DL001**: A vertical rectangular block on the left side.
- IC001**: A rectangular block in the lower-left area.
- RV001**: A block labeled **ACC** (Automatic Frequency Control) connected to **IC001**.
- RV006**: A block labeled **AFC/CLEANING FLAG** connected to **RV001**.
- RV002**: A block labeled **PILOT BURST LEVEL** connected to **IC001**.
- IC014**: A rectangular block in the upper-left area.
- CN1**: A block labeled **7 1** connected to **IC014**.
- RV010**: A block labeled **PEAK AGC** (Automatic Gain Control) connected to **IC013**.
- RV012**: A block labeled **DEVIATION** connected to **RV010**.
- RV011**: A block labeled **SYNC AGC** connected to **RV012**.
- IC013**: A rectangular block in the center-right area.
- CN8**: A block labeled **7 1** connected to **IC013**.
- CV001**: A block labeled **4.43MHz** connected to **DL002**.
- DL002**: A horizontal rectangular block in the center-right area.
- IC2**: A block labeled **9 1** connected to **RV001**.
- RV005**: A block labeled **AFC OFFSET** connected to **RV006**.
- IC003**: A rectangular block in the lower-center area.
- RV004**: A block labeled **CAR BAL** (Carrier Balance) connected to **IC003**.
- RV009**: A block labeled **PILOT BURST FLAG** connected to **RV005**.
- IC012**: A block labeled **14 8** connected to **RV009**.
- RV008**: A block labeled **SHIFT** connected to **IC012**.
- RV013**: A block labeled **EX CHROMA LEVEL** connected to **DL002**.
- IC9**: A block labeled **1 9** connected to **RV013**.
- Q034**: A block labeled **Q034** connected to **DL002**.
- LV002**: A block labeled **COMB** (Comb Filter) connected to **DL001**.
- RV003**: A block labeled **COMB** connected to **LV002**.

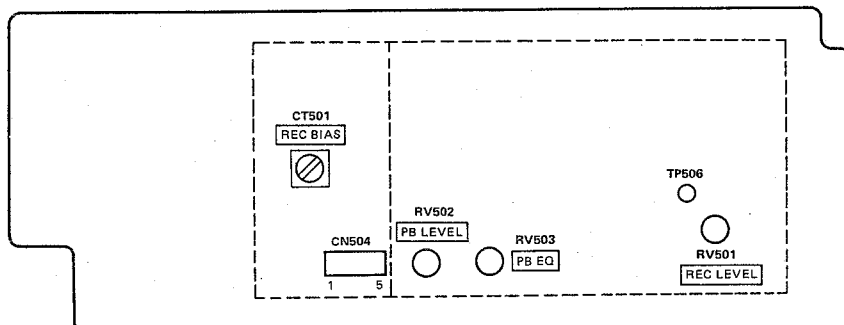
The diagram illustrates the Tracking Control Section, featuring the following components and connections:

- IC301**: A central vertical component with pins 1, 21, 22, 42, and 51.
- IC302**: A component at the top center.
- RV302**: A component labeled "SWITCH POSITION B" connected to IC301 pin 42.
- RV309**: A component labeled "FWD TORQUE" connected to IC301 pin 1.
- RV301**: A component labeled "SWITCH POSITION A" connected to IC301 pin 21.
- RV303**: A component labeled "DRUM FREE SPEED" connected to IC301 pin 22.
- RV310**: A component labeled "IH CORRECTION" connected to IC301 pin 42.
- RV308**: A component labeled "CUE/REV DC BIAS" connected to IC301 pin 51.
- RV307**: A component labeled "X1 DC BIAS" connected to IC301 pin 51.
- RV304**: A component labeled "TRACKING CENTER" connected to IC301 pin 1.
- TP402**: A component connected to IC301 pin 42.
- TP405**: A component connected to IC301 pin 21.
- TP407**: A component connected to IC301 pin 22.
- TP601**: A component connected to IC601 pin 32.
- IC601**: A component at the bottom right with pins 1, 32, 64, and 33.

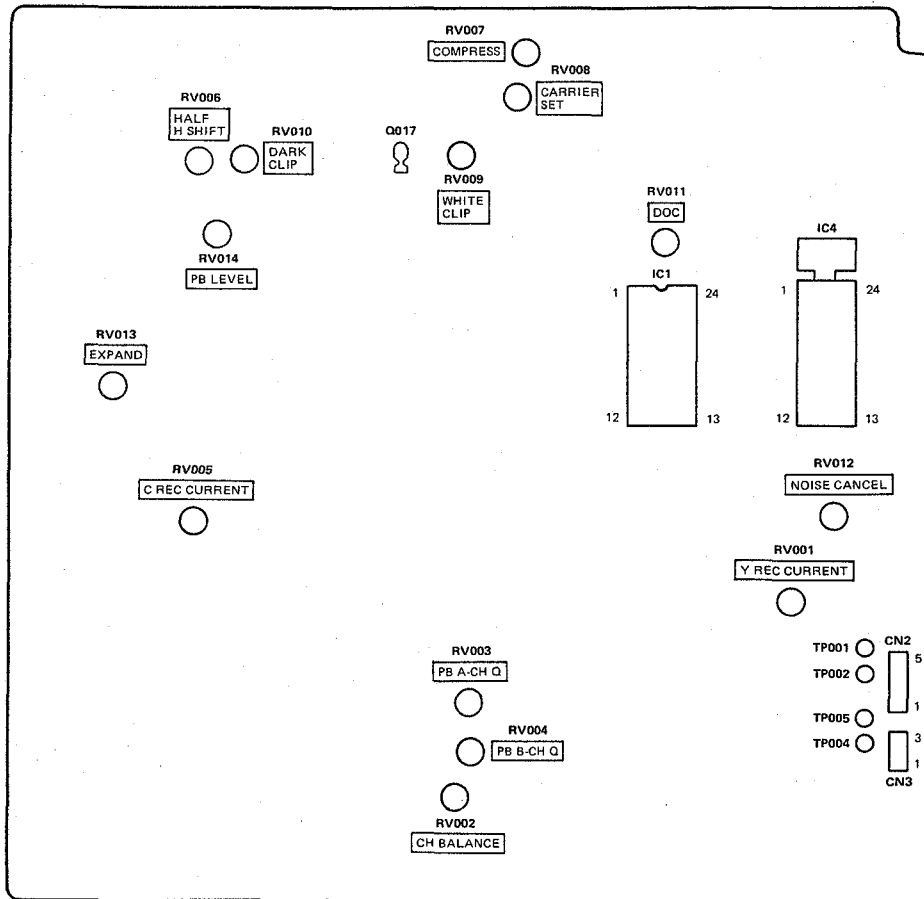
TU-39 BOARD — COMPONENT SIDE —



AM-3 BOARD — COMPONENT SIDE —



RY-1 BOARD — COMPONENT SIDE —



TM-37 BOARD — COMPONENT SIDE —

